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The Metal Worker

A WEEKLY JOU...

ROOFING, CORNICE, STOVE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

VOL. LIII. NUMBER 8 | NEW YORK AND CHICAGO, FEBRUARY 24, 1900. | ONE DOLLAR A YEAR. SINGLE COPIES, 5 CENTS.

IRON STONE STOVE LINING.

Fits any Stove.

Plastered in like mortar. *Gets as hard as brick.*

MY FACE ON EVERY BAG.

PRICES—$1.60 per doz. 10 lb. bags in 2 doz. lots. $1.00 per doz. 6 lb. bags in 3 doz. lots. ONE CENT per lb. in bulk in Barrel.

Address WILLIAM M. NEWTON, Albany, N. Y.

For Steam and Hot Water Heating.

You Want the Best—We Have It.

SEND FOR CATALOGUE AND INVESTIGATE FOR YOURSELF.

GORTON & LIDGERWOOD CO.,

Old Colony Bldg., CHICAGO. 96 Liberty St, NEW YORK.
77 Oliver St., BOSTON, Prudential Bldg., ATLANTA, GA.

GORTON "Side Feed" BOILERS

Tinplates } Stewart Trench & Co., NEW YORK.

Diamond Thimbles. S. CHENEY & SON, Manlius, N. Y.

THE WEIGHT

of argument is all on the side of the dealer who sells the Paragon Furnace. Are you he?

ISAAC A. SHEPPARD & CO,

Makers of Excelsior Ranges, Paragon Hot Water Circulators and Steam Generators.

NEW YORK. PHILADELPHIA. BALTIMORE.

You can get more time on non-Apollo galvanized iron—it'll take more time to work it too.

Apollo Iron and Steel Company, Pittsburgh.

Steel Baths,

Both *all steel* and *steel copper lined*, for sale at low prices, delivered to buyer's station.

E. S. WHEELER & CO.,

256 Water St., New Haven, Conn.

New York Store, 10-12 Cliff St.
New York Showroom, 160 Fifth Ave.
Boston Agency, 220 Devonshire St.

PAGE 10 DIGHTON

No.	19.	20 in.	pot,	$40.00	castings,	$8.00	casings.
"	21.	22 "	"	48.00	"	9.00	"
"	23.	24 "	"	60.00	"	11.50	"
"	25.	26 "	"	70.00	"	14.00	"
"	28.	29 "	"	100.00	"	7.00	"
"	30.	31 "	"	125.00	"	17.00	"

CROSBY SPRING-SEAT GLOBE and ANGLE VALVES, IRON and BRASS.

All working parts renewable without taking the valve from piping All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.

CROSBY STEAM GAGE & VALVE CO.,

BOSTON: 95 Oliver St. NEW YORK: 78 John St. CHICAGO: 21-23 W. Lake St.

THE Struthers Iron and Steel Co.

STRUTHERS, OHIO

MANUFACTURERS OF THIS BRAND

UNIFORM-SOFT-SMOOTH CLEAR FINISH

CLOVER LEAF BRAND

STRUTHERS IRON & STEEL CO. STRUTHERS, OHIO.

GALVANIZED SHEETS.

We manufacture only the highest grade Galvanized and Black Sheets. Our Clover Leaf Galvanized Sheets are uniformly soft, well coated and no rough edges; especially adapted for cornice and eave trough work or where an extra soft sheet is required. *You cannot buy a better sheet.*

FOR SALE:

Cheap, **Complete Sturtevant Blowing and Heating System,** containing 3000 feet of heating surface.

KIELEY & MUELLER,

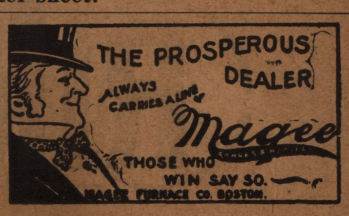
7 to 17 West 13th St., NEW YORK.

JENKINS AUTOMATIC AIR VALVES

with Drip-pipe Connections insure perfect circulation. You are not annoyed with escaping steam or dripping of water. They are stamped with our Trade-Mark.

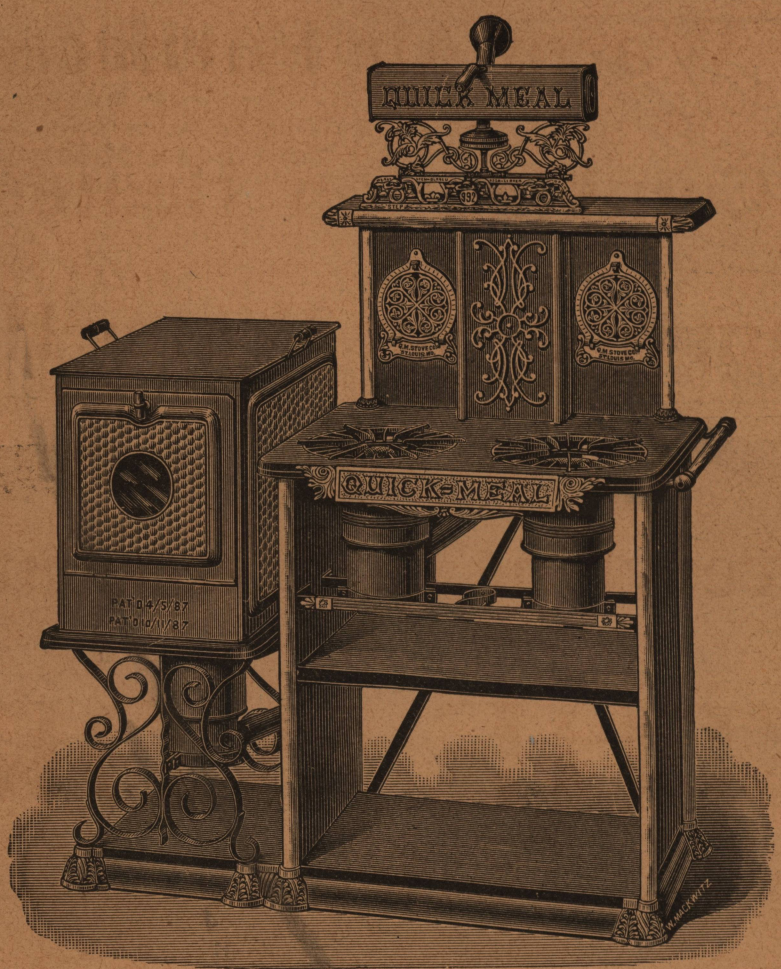
JENKINS BROTHERS,

New York, Boston, Chicago Philadelphia.



QUICK MEAL

Gasoline Stoves.



"Quick Meal" Evaporators are easy Sellers, because their points of superiority are so many and so marked that customers can see them at once. No brain racking is necessary to find talking points for the **"Quick Meal"** Evaporator.

Then the name is so favorably known everywhere and is a recommendation and a guarantee in itself. Then the ornamentation is so rich and so tasteful. There is just enough of it; neither too much, nor too little. The **"Quick Meal"** sells and satisfies. The Stove that leads in Quality, Name and Merit.

RINGEN STOVE Co. SAINT LOUIS

LARGEST MAKERS

OF

Warm Air Furnaces,

Combination Heaters,

Steam and Hot Water Heaters

AND

Acetylene Gas Generators

IN THE WORLD.

OUR NAME IS A

Guarantee of Excellence.

International Heater Co.,

UTICA, N. Y.

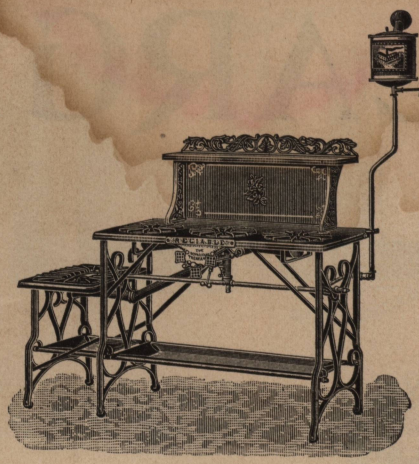
NEW YORK, 237 Water St.

BOSTON, 47 Union St.

CHICAGO, 48 Dearborn St.

DENVER, The Kellogg & Stokes Stove Co.

1900



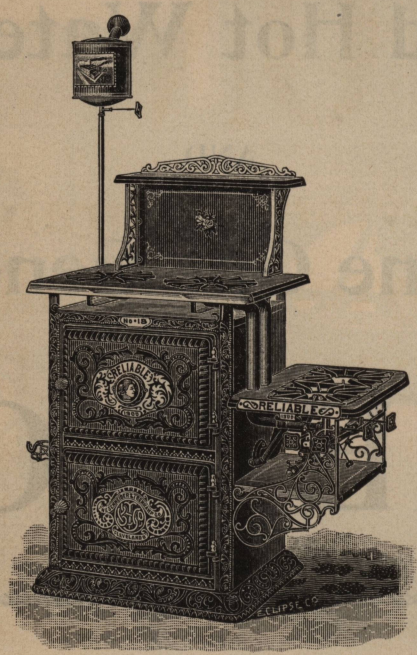
Our constant aim has always been to make

RELIABLE STOVES AND RANGES

The very best that skill and brains can produce

Our Facilities are Unequaled.

Our Plant the Largest and Best Equipped.



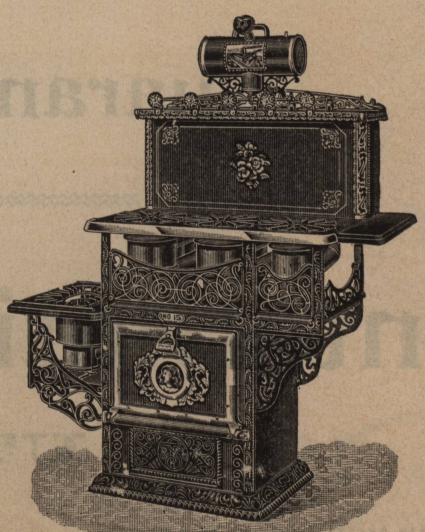
Our Materials the Very Best.

Our Machinery the Very Latest.

CATALOGUES NOW READY. *WRITE US.*

THE SCHNEIDER & TRENKAMP CO.

CLEVELAND and CHICAGO.



NATIONAL

National Insurance Safety.
National Process Gasoline.
National Junior Gasoline.
National Wickless Oil.
National Ovens.

DAYTON

Dayton Insurance Safety.
Dayton Insurance Gasoline.
Dayton Knock Down Ovens.

By the addition of the Dayton Insurance Stoves to our line we have the best and most complete line of Summer stoves made. *We have been compelled to increase our plant by the addition of buildings and machinery.*

We are the Largest Makers of Gasoline Stoves in the World to-day.

DISTRIBUTING REPRESENTATIVES:

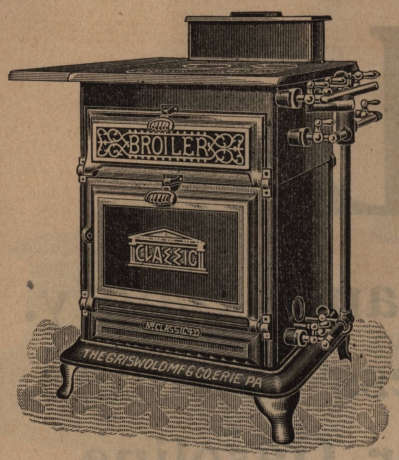
PRESCOTT & Co., Boston, Mass.
EUGENE MUNSELL & Co , New York.
F. M. BORDEN & BRO., Philadelphia, Pa.
THE B. C. BIBB STOVE Co., Baltimore, Md.
BUTLER & JOHNSON, Syracuse, N. Y.
THE LOGAN GREGG HDW. Co., Pittsburg, Pa.
BRIDGEFORD & Co., Louisville, Ky.
H. KOCH & SON, Evansville, Ind.
H. LEONARD & Co., Grand Rapids, Mich.
INSURANCE STOVE AND OIL Co., Cincinnati, O,
HARPER & MCINTYRE Co., Ottumwa, Iowa.
J. S. HALL, Monticello, Iowa.
BELLEVILLE STOVE WORKS, Belleville, Ill.
BELLEVILLE STOVE WORKS, Kansas City, Mo.
PETERS HDW. Co., Emporia, Kan,
A. D. MCBRYDE, New Orleans, La.
THE FOX & RAMSEY STOVE Co., Memphis, Tenn.
BOUTELL BROS, Minneapolis, Minn.
D. MOORE Co., Ltd., Hamilton, Ont
Z. T. MILLER & SON, Bloomington, Ill.

THE NATIONAL VAPOR STOVE & MFG. CO.,

Philadelphia Branch:
50 N. 2d St.

LORAIN, OHIO.

Chicago Branch:
104 and 106 Lake St.
A. C. BARLER MFG. Co., Managers.



"CLASSIC" GAS RANGES.

Mark perfect in Gas Range Construction. ***Patent Roof Cap*** burners, ***Dirt Proof,*** Independent Broiler Over Oven, easy to use. Perfect Combustion, Adjustable Valves. If you have never seen a ***"CLASSIC,"*** send for sample. It will pay you to handle a strictly ***High Grade Range,*** with ***New Features.***

"ERIE" GAS RANGES.

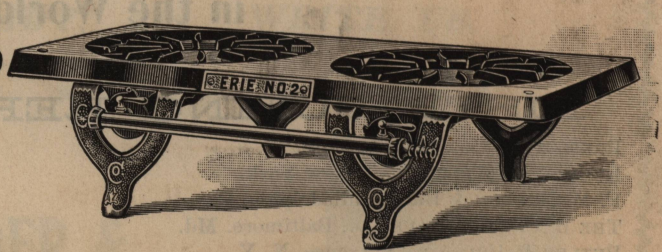
Made with three size Tops, 2, 3 and 4 hole; also with independent broiler. ***Patent Center Draft Burners.*** A perfect Baker and Cooker. Full size oven, 18 x 12 x 12 inches inside. Stands full height of gas ranges. Will do the work of a regular gas range, making the best Summer Range on the market. ***Try them:***

"ERIE" OVENS,

Asbestos Lined. Made in Two Sizes.

Strong malleable iron hinges, nickel-plated, will never burn or rust out. Made of polished steel, handsomely embossed, lined with asbestos on all sides. A strictly first-class oven, strongly made. We guarantee them to be perfect bakers. Send for samples.

"ERIE" HOT PLATES



Patent Center Draft Burners.
Patent Truss Feet.

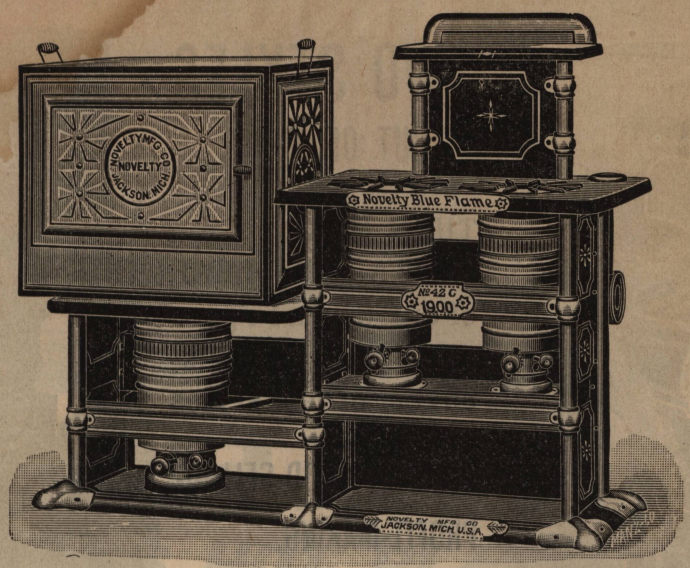
The best hot plate made. We make a most complete line of Hot Plates, six distinct styles, twenty different sizes. Grades to suit all buyers. You cannot make a mistake in handling the above lines.

WRITE FOR NEW CATALOGUE AND PRICES.

THE GRISWOLD MFG. CO.,

ERIE, PA.

CABINET COOKS.



WE OFFER to the trade for 1900, the finest line of BLUE FLAME COOKING STOVES ever seen. These are not "Wickless Wonders." They are our Wick Blue Flame Stoves that have been tried and tested for years. All mounted in handsome cabinet form.

You want them. Your trade wants them. You have had bitter experience with Wickless Stoves. There is nothing like a pure cotton wick for drawing oil and supplying it evenly to a burner.

Samples are now ready. Order a line and compare them with others. They will bear investigation.

NOVELTY MANUFACTURING CO., Jackson, Michigan, U. S. A.

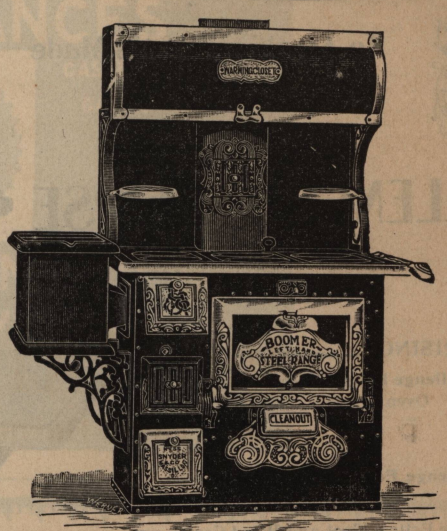
Profitable Results - Are Obtained by all Dealers who sell

The Celebrated

BOOMERS

Boomer Warm Air Furnaces

or Boomer Steel Ranges



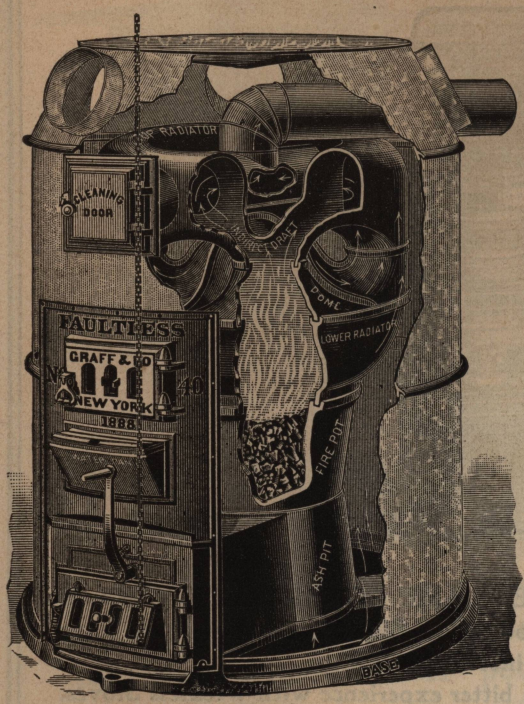
"Boomer Steel Range."

Have been thoroughly tried and tested, and have proven a success beyond expectations in the hands of many first-class dealers. Don't expect a description here, but write us for catalogues at once.

If you do not handle Boomers, and want to make money in '99, write us. Our prices will interest you.

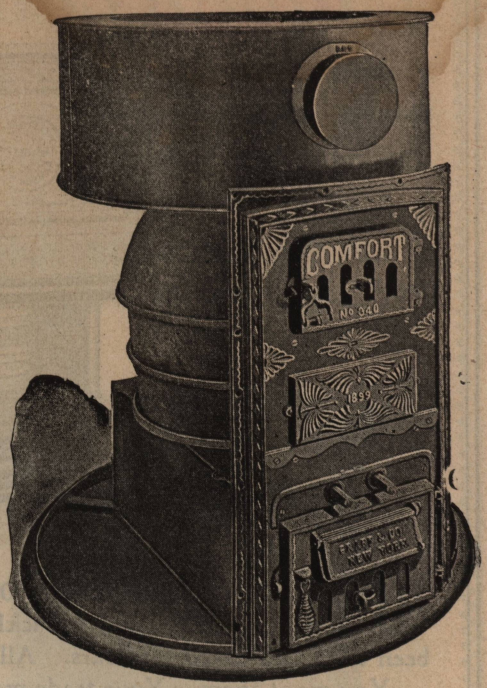
HESS, SNYDER & CO., - Massillon, O.

FAULTLESS and COMFORT.



TWO STYLES
OUT OF MANY.

TURN OVER
A NEW LEAF
of our Catalogue
and you will discover other styles
of
GOOD-SELLING,
PROFIT-MAKING,
CUSTOMER-KEEPING
FURNACES.



Investigation Costs You Nothing.

GRAFF & CO., Manufacturers,

208 Water Street, New York.

A CHALLENGE

To Anything That's Made

IS THE

CHALLENGE ECLIPSE

LINE.

COMPRISING

Challenge Eclipse Wood Cook.

No. 7 or 8-71	Oven 16 x 17	Fire Box 20 inches.		
No. 8 or 9-91	" 18 x 19	"	"	22 "
No. 8 or 9-12	" 20 x 21	"	"	24 "

Challenge Eclipse Wood Range.

No. 8 or 9-12 Oven 20 x 21 Fire Box 24 inches.

Challenge Eclipse Coal and Wood Cook.
(Combination Fire Box).

No 7 or 8-61	Oven 16 x 16
No. 8 or 9-81	" 18 x 18
No. 8 or 9-02	" 20 x 20

Challenge Eclipse Coal and Wood Range.
(Combination Fire Box).

No. 8 or 9-02 Oven 20 x 20

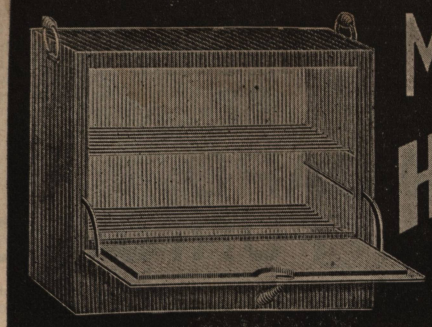
Challenge Eclipse Coal and Wood Range.

Write for Catalogues and Discounts.

THE ECLIPSE STOVE CO.,

.....Mansfield, Ohio.....

"Good Morning—I've used an Acme Oven."



MANUFACTURED BY

H. ADLER CO.

241-243-1ST AVE.
AND 238-2ND AVE.,
PITTSBURGH, PA.

J. M. LITCHFIELD, Ag't.
105 BEEKMAN ST.
NEW YORK.

W. W. TURNER & CO., Chicago, Western Agents.

LAWRENCE

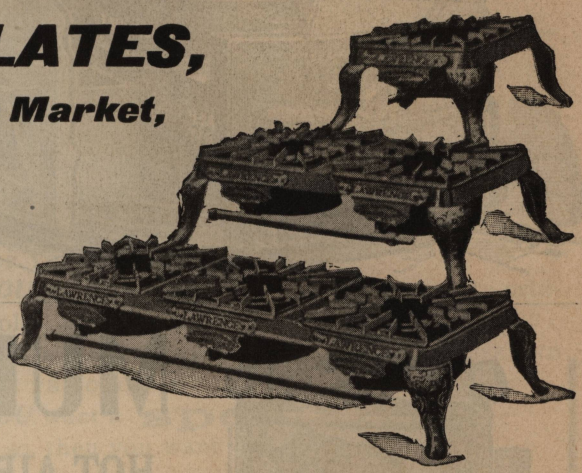
ODORLESS HOT PLATES,

The MOST SANITARY Stove on the Market,

ARE MADE BY

Acme Gas Stove Co., Buffalo, N.Y.

CORRESPONDENCE SOLICITED.



IMPORTANT NOTICE.

After March 1st, this firm will be known as the LAWRENCE STOVE MFG. CO., our prominent lines being "LAWRENCE" goods. We make no goods under the name "ACME."

GAS APPLIANCES.

GAS STOVES
GAS RANGES
GAS HOT PLATES
GAS WATER HEATERS
GAS FITTINGS, TUBING

GAS LOGS
GAS HEATERS
GAS RADIATORS
GAS IRONS
GAS KILNS

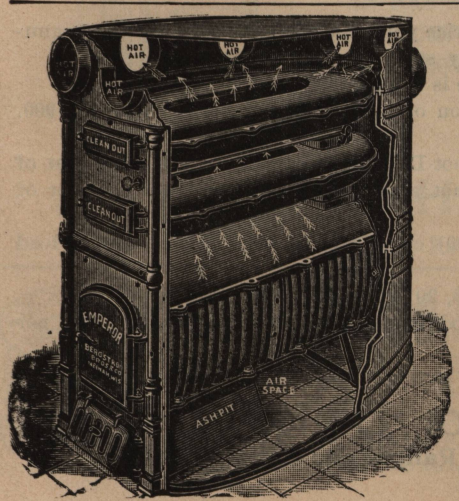
WILLIAM M. CRANE CO..

1131-1133 BROADWAY, NEW YORK, U.S.A.

SOLE AGENTS FOR BRAY BURNERS.

FOUNDRY—
PEEKSKILL, N.Y.

SEND FOR CATALOGUE.



Emperor Furnaces

FOR WOOD.

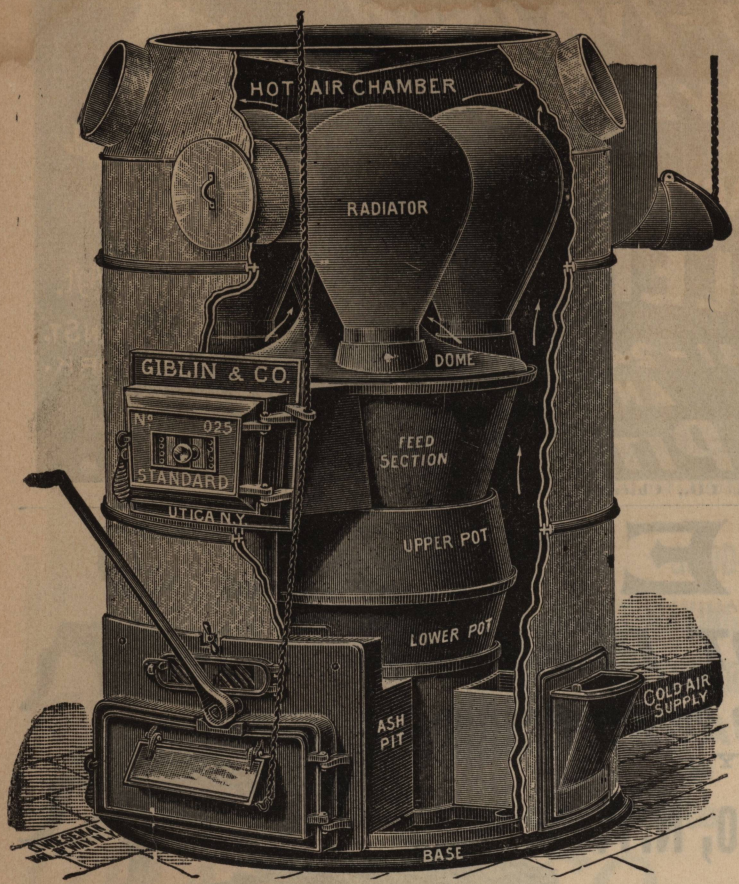
Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing.

SEND FOR CATALOGUE.

Bergstrom Bros Co.

NEENAH, WIS.



DON'T YOU KNOW

some one of your customers who has been complaining and swearing at his furnace for several years past because of the fuel it uses, the work it requires, the gas and dust it generates? If you do, tell him that you can remove his troubles for a certainty and show him that you will do it by using the

STANDARD FURNACE

He wants heat at a reasonable cost; he don't want labor, nor gas, nor dust. These furnaces

FURNISH HEAT

at little cost, but

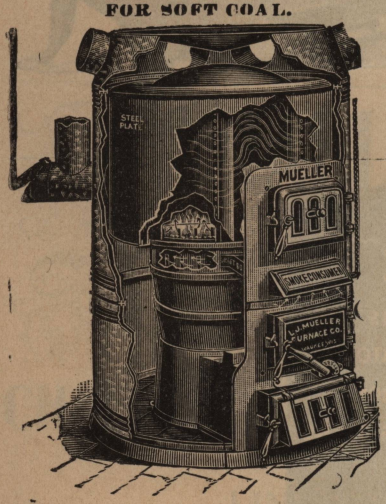
NO Gas, Dust,

and little labor.

When you get that man suited he makes the best advertising medium for your business that you can get and will sell for you furnaces to his neighbors. To convince him you must know the merits of these furnaces and our catalogue will inform you.

SEND FOR IT NOW. **GIBLIN & CO., Utica, N. Y.**

FOR SOFT COAL.



MUELLER

HOT AIR FURNACES,
COMBINATION HEATERS,
STEAM AND HOT WATER BOILERS.

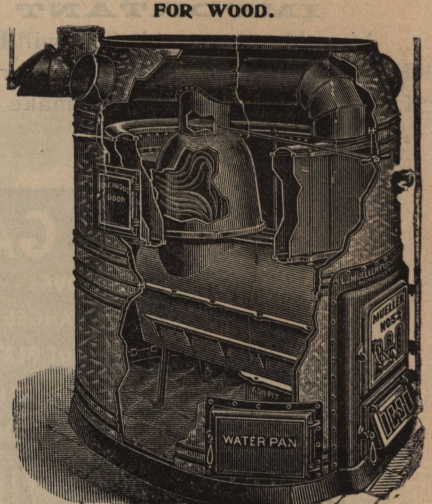
Large variety for all kinds of fuel.

WRITE FOR CATALOGUE AND PRICES.

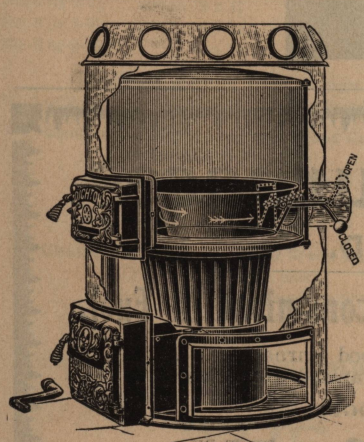
We are also jobbers of everything pertaining to the heating trade.

ESTABLISHED 1857.

FOR WOOD.



L. J. MUELLER FURNACE CO. 190 Reed St., MILWAUKEE. WIS.



DID you ever stop to think when looking up the cost to you of a large Furnace, how much of the price you paid was for the Furnace and how much for the pattern cost, name, and selling expense?

Did you ever think what per cent. of the price you paid would be used by the manufacturer to help pay the expenses of a large city store?

The price of a 31-inch pot Dighton Furnace is $75.00.

This selling price is based on our expectation of selling 125 of this one size in 1900. We hope to sell at least 175.

We know of one instance where a 31-inch pot Dighton is heating 60,000 cubic feet of space in a store. We didn't advise it, as it is not good business to overload a heater of any kind.

Forty to forty-five thousand (40,000 to 45,000) cubic feet should be the limit of load for any 31-inch pot Furnace we know about.

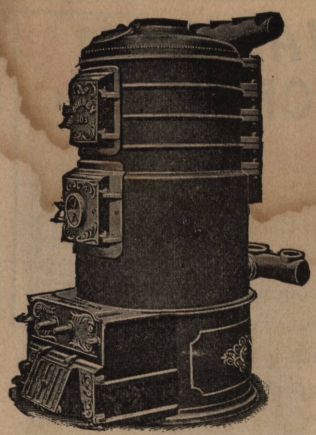
We manufacture heavy Round Gratings, 18, 20, 24, 28 inches in diameter.

When you buy a Dighton you don't pay good dollars for each letter of the name nor help to support prestige or dignity.

If you don't get real *Furnace* value in the Dighton, send it back and get your money.

DIGHTON FURNACE CO., - No. Dighton, Mass.

Makers of Furnaces, Registers, Steam and Hot Water Heaters, Ranges and Gas Hot Plates.



"400 Series" Hot Water Heater.
Perspective View.

Gurney

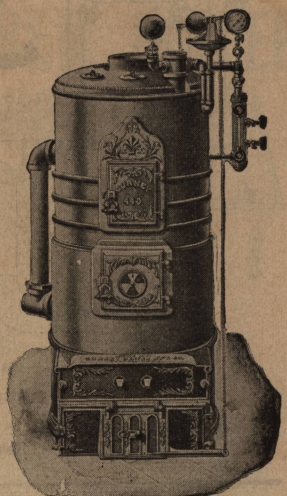
Hot Water Heaters, Steam Boilers, Radiators

Represent the advance made of late years in the scientific construction of heating apparatus.

Our "400 Series" Hot Water Heaters and Steam Boilers embody all the latest approved ideas of construction They are of the sectional type with push nipple joints, and have the improved revolving grate.

SEND FOR LATEST TRADE CATALOGUE AND DESCRIPTIVE CIRCULAR.

SOLD ONLY THROUGH THE TRADE.

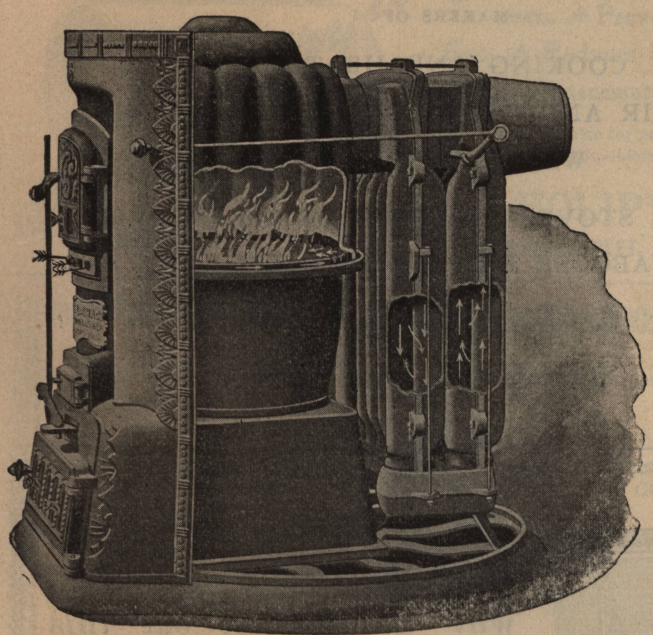


"400 Series" Steam Boiler.
Perspective View.

New York Branch:
611 Fifth Ave., cor. 18th St.,
NEW YORK, N. Y.

GURNEY HEATER MFG. CO.

HEAD OFFICE: 74 FRANKLIN ST., COR. ARCH,
BOSTON, MASS.



Are you looking for a SUBSTANTIAL LOW DOWN FURNACE?

DO YOU want an all cast furnace with more RADIATING SURFACE THAN ANY OTHER MADE?

DO YOU want a furnace that will give the MOST HEAT FOR THE LEAST FUEL?

DO YOU want a furnace built on common sense principles, and one that sells itself?

DO YOU want a **specialty?**

If so, then you want the

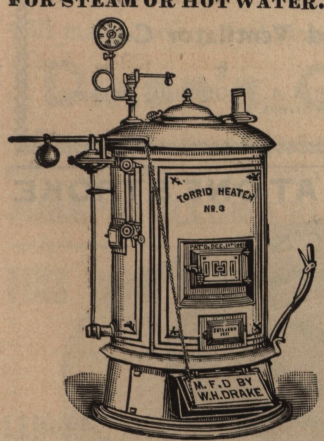
BENGAL.

Agencies are being placed, and if you want to control a good thing write at once or it may be too late.

FLOYD, WELLS & CO.,
ROYERSFORD, PA.

Eastern Selling Agents:
GURNEY & CO., 19 to 25 Eliot St., Boston, Mass.

"TORRID" HEATER.
FOR STEAM OR HOT WATER.



IT IS PRACTICAL IN DESIGN.
IT IS SAFE, BEING TESTED TO 200 POUNDS.
IT IS EASY TO MANAGE AND KEEP CLEAN.
IT IS DURABLE.
IT IS SECTIONAL AND EASILY HANDLED.
IT HAS NO PACKED JOINTS.
IT IS SELF-FEED OR SURFACE BURNING.
IT HAS THE TORRID PATENT ROCKING AND DUMPING GRATE.
IT IS LOW IN PRICE.

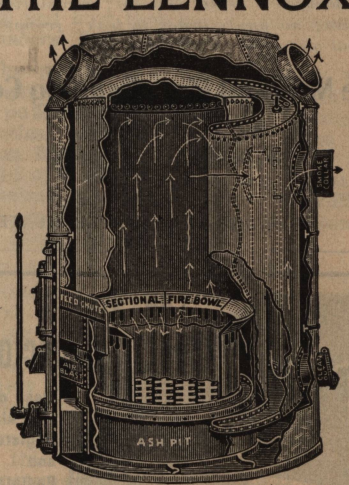
SEND FOR CATALOGUE.

MANUFACTURED BY

W. H. DRAKE,
No. 36 Clinton St., NEWARK, N. J.

Factory: Hackettstown, N. J.

THE LENNOX

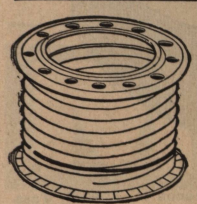


Steel Furnace.

MADE BY

THE LENNOX MACHINE COMPANY,

East Fredrick St., Marshalltown, Iowa.
CATALOG FREE.



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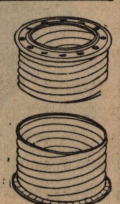

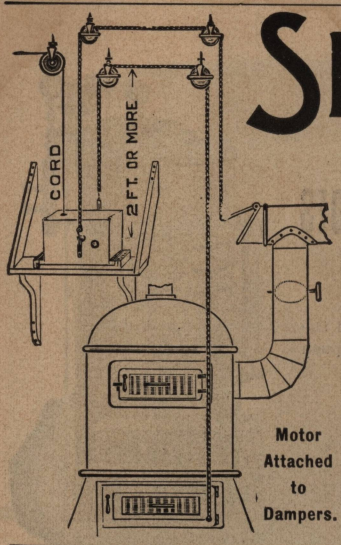

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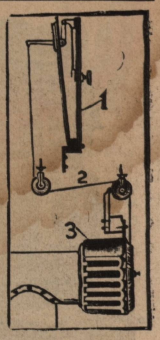

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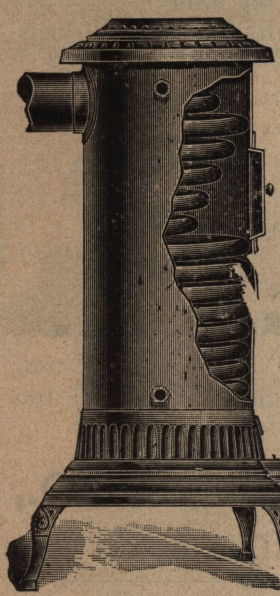

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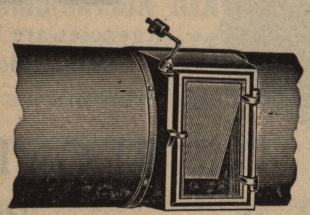

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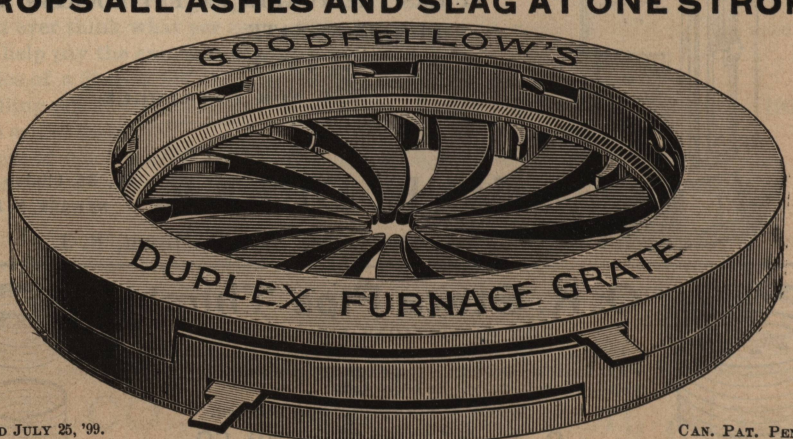

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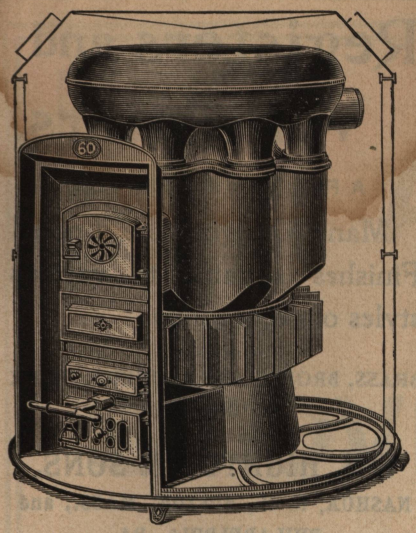

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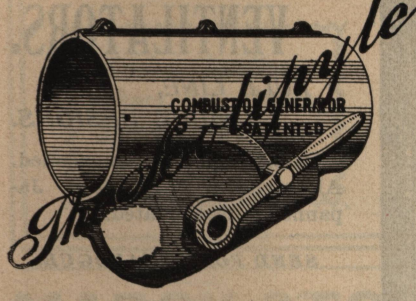

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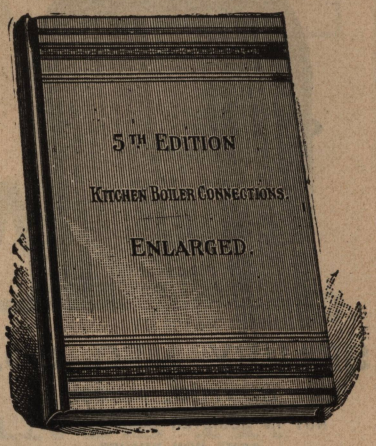

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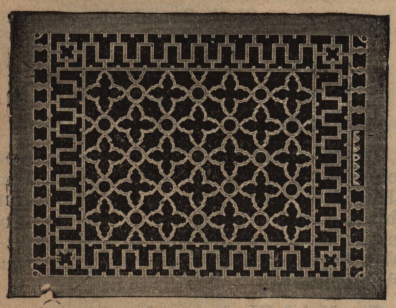

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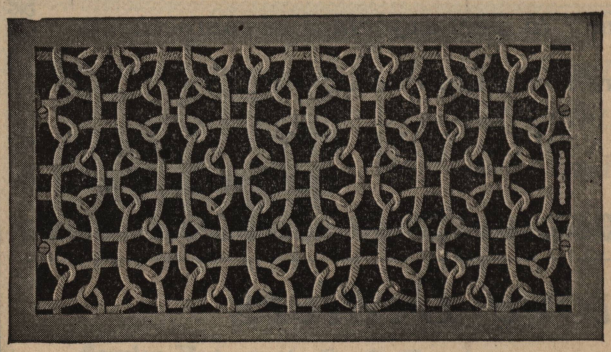

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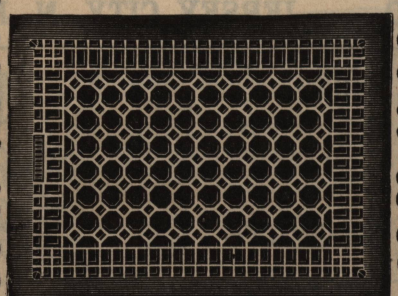

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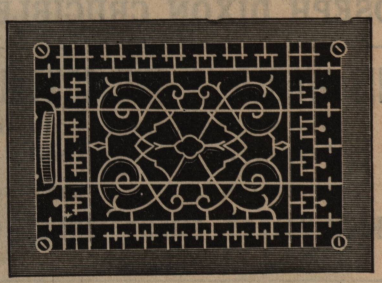

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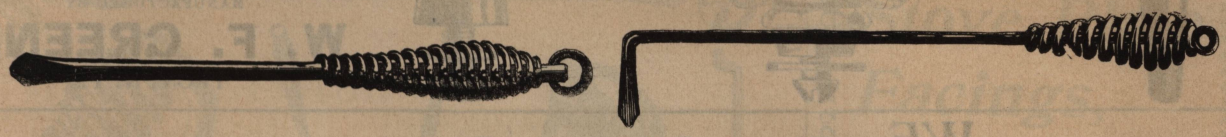

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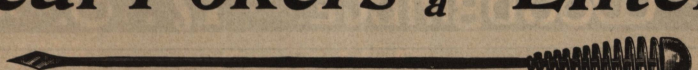

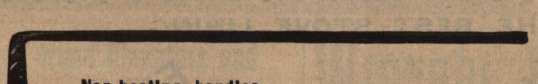

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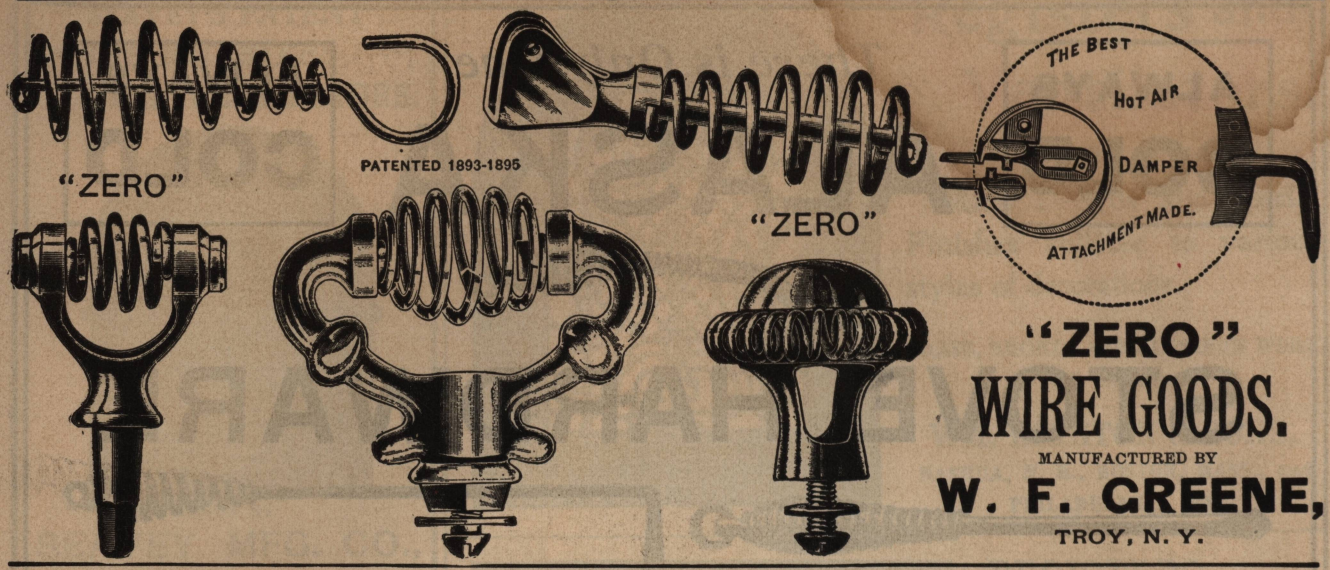

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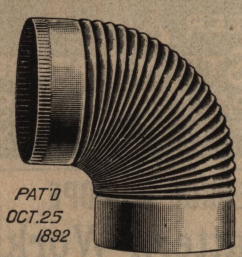

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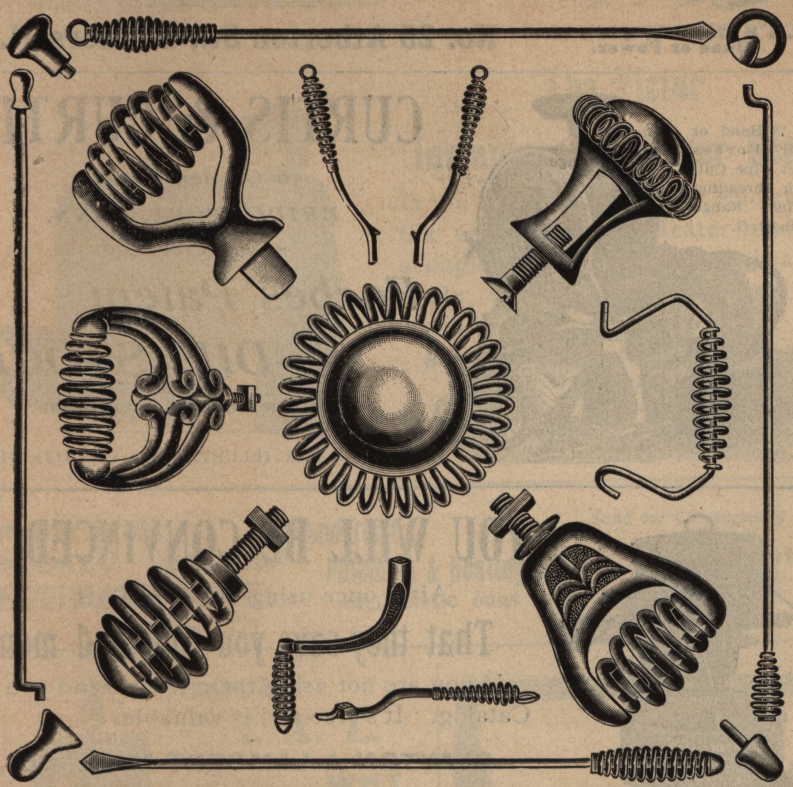

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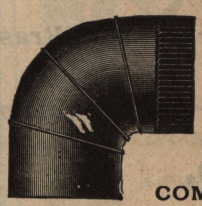

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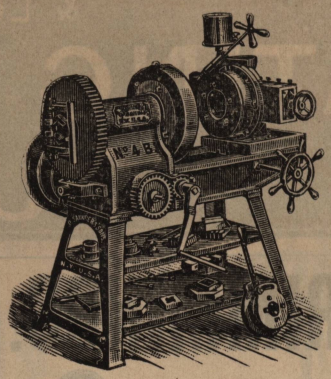

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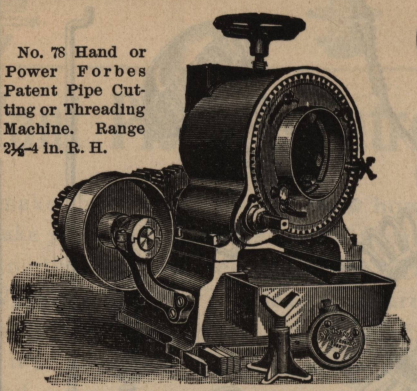

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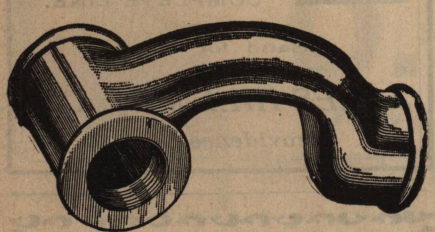

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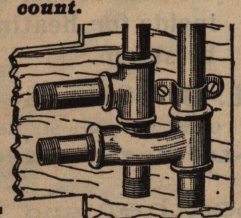

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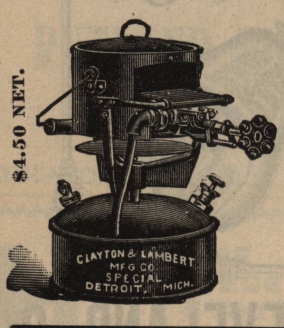

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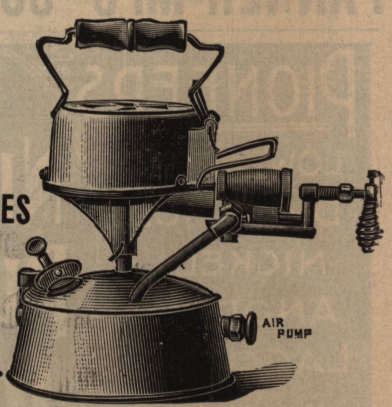

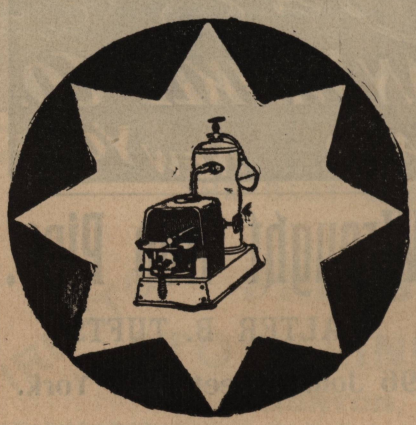

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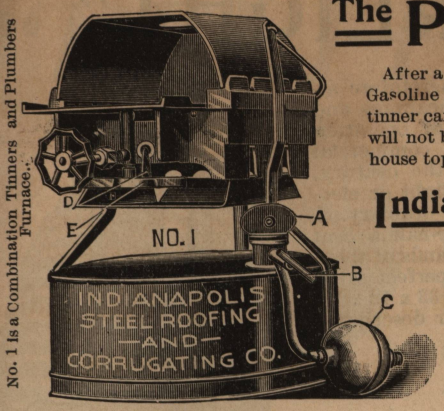

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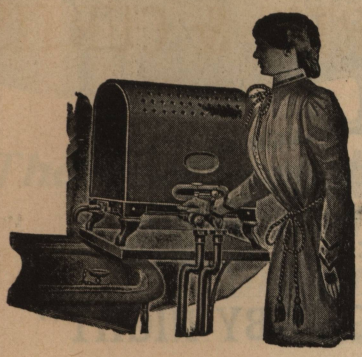

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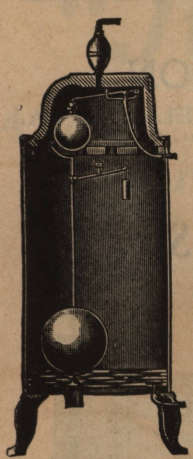

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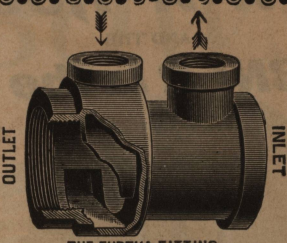

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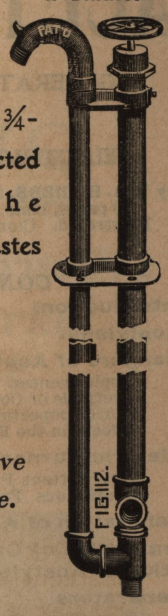

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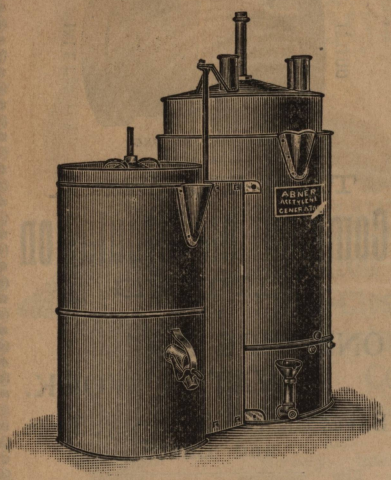

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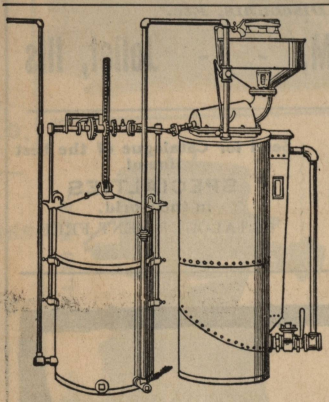

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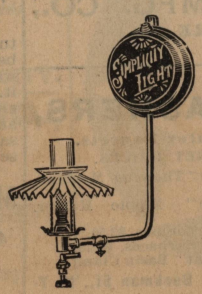

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Can be put up anywhere. Produces a soft, steady and very brilliant white light. Guaranteed not to smoke or discolor ceilings. Send for Catalogue.

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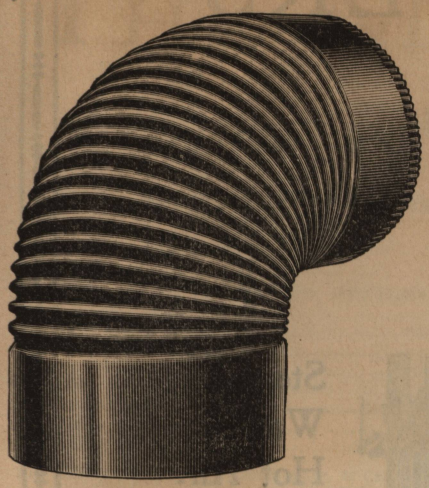

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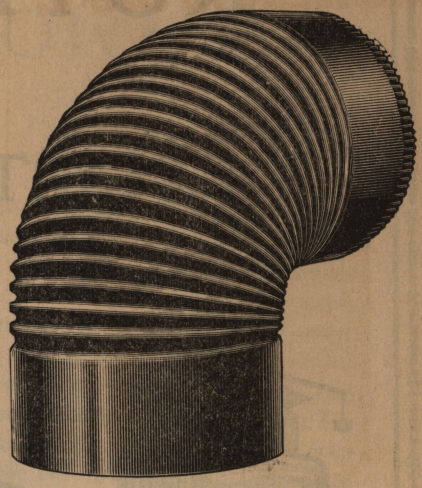
Made in one piece, with but one seam and that in the throat. This hides the seam and gives strength where strength is needed. Dispenses with unsightly joints that break apart.



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The "Perfect" Elbow has long ends, is true to size, perfectly round and always fits. It is more stylish, more graceful, more durable and better made than any other elbow. Most profitable to sell.

ALL SIZES, 3 TO 8 INCHES.

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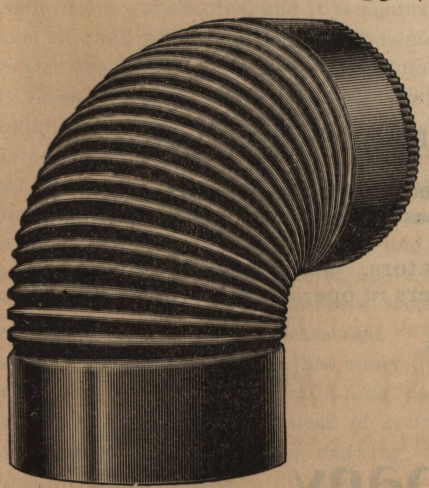

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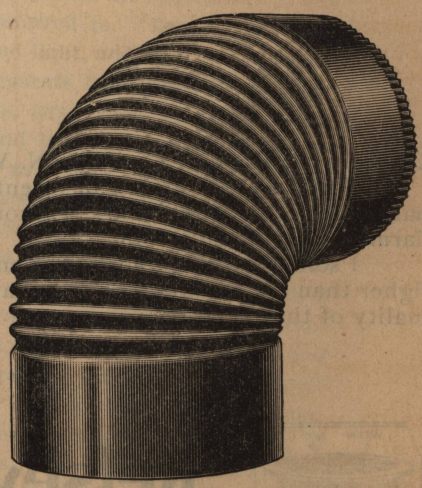

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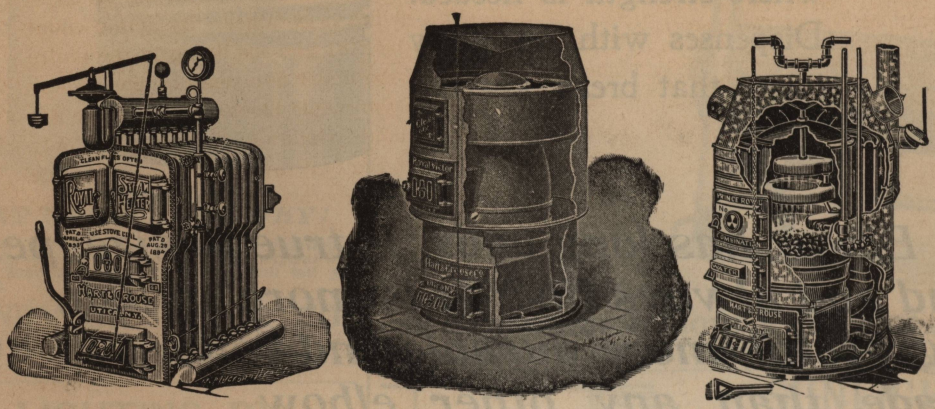

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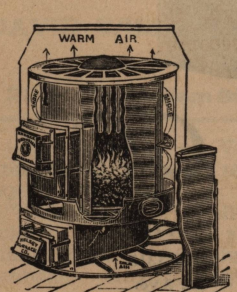
GENTLEMEN: Yours of recent date to hand, and have carefully noted the advance in prices you are making for the coming year. Of course, should have liked the former prices to continue, but am not at all alarmed over the situation.

I sold and placed here, in Rome, last year, over forty of your Generators. My prices are invariably higher than my competitors', but having over two hundred of your Heaters in operation in this city, the quality of the "Kelsey" secures to me the business.

Very sincerely yours,

JAMES H. McLEAN.

For Catalogue and Prices write



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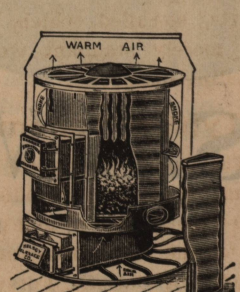

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NEW YORK AND CHICAGO.

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A Tenement House Exhibit.

A striking object lesson is presented in the exhibition now being held at Fifth avenue and Thirty-seventh street, New York City, by the Tenement House Committee of the Charity Organization Society. This exhibition has been arranged for the purpose of arousing the public to the serious defects in the present building laws of the city and to the pressing necessity for better laws. Beautifully constructed models show the ideal tenement plans approved by the committee, some of which have been already carried into effect. Other models show just as faithfully the wretched, stifling and unsanitary rookeries that exist in New York, giving the city a bad eminence as one of the most slum-ridden communities of the world. These exhibits are reinforced by hundreds of photographs, illustrating the history of the city tenement house in its worst to best estate. Still others show blocks of so-called modern tenements, more attractive to outward appearance than the old rookeries, but, from a hygienic point of view, equally unsanitary and reprehensible as dwelling places. The wretched, primitive tenements are slowly but gradually passing out of existence by the natural process of development; but, unfortunately, they are being rapidly replaced by these undesirable substitutes, and it is against the multiplication of such buildings that the Tenement House Committee are trying to arouse public opinion. Unfortunately these jerry-built structures comply with the defective building laws now existing, so that the only remedy is a radical change in those laws. According to the committee, whose investigations on the subject have been very thorough, there are at present on Manhattan Island over 44,000 tenement houses, and new tenements are being erected at the rate of about two thousand a year, which are, in some respects, worse than the old structures put up thirty years ago. "They are badly constructed and so planned that many rooms depend for their light and air entirely upon long, narrow, dark 'air shafts,' so-called, which, instead of giving light and air are merely stagnant wells, emitting foul odors and breeding diseases."

A Typical Tenement Block.

The models shown are not fanciful constructions, but actual miniature reproductions of real city localities, with the dimensions and proportions carefully observed. One of the most interesting shows the East Side block bounded by Christie, Forsyth, Bayard and Canal streets, in which all legal provisions are complied with. In this block are 605 different sets of apartments, 263 consisting of two rooms each and 179 of three rooms each, the remainder of four rooms. For these apartments an average rental of $15 a month is obtained. By actual count there were found to be 2781 persons living in the entire block, of whom 466 were under five years of age. There is not a bathroom in the whole block, and in it are 441 rooms that are without windows. Twenty feet only separates the rears of the two rows of houses. The air and light shafts, closed at both ends, are forty feet long and only thirty inches wide. So little sunlight penetrates below the two upper floors that half way down the inner sides of the buildings, looking from above, there is almost perfect darkness, even when the sun is shining. This is a typical tenement house block, of which hundreds exist on the East Side of New York. These conditions fully justify the committee in their assertion that "the present condition of the tenement houses of the city is so serious that the evils arising therefrom are a distinct menace to the welfare of the community."

A Model Tenement.

The committee referred to are not content, however, with laying bare the evils of ancient and modern tenement house construction, with the view of changing the laws relating thereto. They have also done something definite in the direction of improving existing conditions by calling for plans for model tenements, and awarding to the successful competitor the contract for carrying those plans into effect. The winner of the society's competition, R. Thomas Short, architect, has received orders to erect a model tenement building at a cost of $80,000, to cover four city lots. The building to be put up will be of six stories, and is arranged so as to secure a maximum of economy, sanitation, comfort and privacy, while providing fourteen roomy apartments that will be rented for less money than the apartments in the typical rookery before referred to. Every room will have abundance of air and light, and each set of apartments will be entirely separate from the others. Each will have its own closets, gas range, sink and washtubs, with steam heat and hot water supplied. Baths will be provided on the first floor, and there will be dumb waiters, dust chutes and other conveniences. That such model tenements are good paying investments has been proved by the experience of those alerady existing in New York and other cities. In London, it is stated, 150,000 persons live in the model tenements that have been erected in that city within recent years, and the demand for such improved dwellings is so urgent that they can hardly be put up fast enough. Consequently the "slum" over there is fast becoming a vanishing factor. This is what the Tenement House Committee aim at for New York.

Parcels.

It is an old and true adage that says "It is trifles that make perfection, while perfection itself is no trifle." There is a feature in connection with the conduct of a retail store which, while it may possibly be regarded as a trifle, or at least a minor detail, is one that is well

worth attention. It is the method of making up parcels. Every purchaser, particularly if he has to carry it, likes to have his goods wrapped up in a neat looking and securely fastened package. Many are particularly fastidious in the matter. An ugly, ungainly looking parcel, loosely tied or inconvenient to handle, is usually provocative of resentment, which is apt to create an unfriendly feeling toward the author of the incubus. Who has not felt that way at times when carrying an untidy bundle that threatens to come apart at any moment, or that looks as if it had been thrown together by a street vender off a barrow? A neat, handy parcel gives as much pleasure to a customer as being courteously and patiently waited upon. The kind of wrapping paper used is a matter that should also receive attention. Most people have a decided objection to coarse and rough papers, or to flimsy paper that is liable to tear and reveal the contents of the package. A strong, plain paper is the best for wrapping purposes, and if an advertisement is printed upon it the printed side should be turned in. It has been found a good plan in some instances to adopt wrapping paper of a peculiar color or style as a kind of trade-mark. Consideration given to these minor points will be well expended and will pay in the long run. Just as the contents of a store are largely judged by the condition of its show window, so the condition of the parcels sent out by an establishment is often taken as an index of its character. Such details are among the elements that go to make success in business, and are, therefore, well worth bearing in mind.

Patents in 1899.

The annual report of the United States Commissioner of Patents for the calendar year 1899, just made public, shows a total of 25,527 patents issued last year, including designs and reissues, a number but once before exceeded in the history of the Department. The total receipts of the office, $1,325,457, were also the largest for any year, except two, since 1836. As was the case last year, more patents in proportion to population were issued to citizens of Connecticut than to those of any other State, the ratio being one to every 945 persons. The report sets forth in detail the system adopted for classifying patents, the need for which has been long felt. The object of classification is to resolve the immense number of inventions into divisions and subdivisions, capable of clear separation and definition, and based upon a system sufficiently elastic to provide for future growth. The Commissioner recommends legislation limiting the number of appeals in "merit" and "interference" cases, and he objects to the practice of keeping applications for patents in the office for an indefinite number of years, as tending to stifle the progress of invention. The issuing of patents, it is urged, would be materially expedited by legislation limiting the number of appeals. Congress is also asked to amend the trade mark statutes so as to provide for the registration of trade marks used in interstate commerce.

The question whether electricity is a taxable article is being hotly discussed in Buffalo. The Merchants' Exchange of that city is strongly opposing the effort of the customs officials to impose a duty of 10 per cent. ad valorem on foreign made electricity imported from the Canadian side of the Niagara River, under the head of an "unenumerated manufactured article." The ground on which the duty is sought to be imposed is that electricity can be measured accurately and sold by units, and ought, therefore, to pay duty as much as any other article of foreign manufacture. On the other hand, the opponents of the proposed taxation argue that there is no such substance as electricity, which is merely a force, and that if it comes into this country from Canada it also returns at once to its source. Nothing material, they say, is imported or exported. The electricity, they argue, simply travels along the line into the United States and immediately travels back into Canada.

The "boycott" as a labor weapon was declared legal by Judge Stover, in the United States Circuit Court in Kansas City, Mo., this week. The decision was rendered in a suit for damages brought by a veterinarian against members of the Master Horse Shoers' Protective Association, and the Journeymen Horse Shoers' Union, for boycotting his non-union horse shoeing establishment. The Judge declared that labor unions have a legal right to put in force a peaceful boycott against employers of non-union labor, and to try, by peaceful and fair persuasive means, to induce customers of a boycotted person or firm to quit dealing with that person or firm and patronize employers of union workers.

The Supreme Court of the State of Missouri has declared the department store law, passed by the last State Legislature, to be unconstitutional and void. The ground is taken by the Court that the law is distinctly class legislation, and, further, that the act is incomplete and is not properly a law. The law applied to St. Louis, Kansas City and St. Joseph, and to stores in those cities employing a specified number of clerks.

A report comes from Spokane, Wash., to the effect that W. T. Clark is building mammoth hot beds, heated with water from artesian wells, to supply the mining camps with vegetables.

Christopher Zug of Pittsburgh, who recently completed his ninety-third year, is generally conceded to be the oldest iron manufacturer in the world. As founder and head of the well-known firm of Zug & Co., Limited, Mr. Zug has been prominent in the iron trade for more years than make up the age of most of its present active members. Although nominally retired from active business, he still visits the offices of his firm with considerable regularity and possesses the vitality of a hale man of twenty years less than his own age. Mr. Zug comes of an exceptionally long-lived family, and bids fair to reach the century mark, a record which his father only missed by a few months.

The London *Quarterly* makes an attempt, by the aid of official statistics, to calculate the amount of provisions consumed yearly in the British metropolis, with its five million and a half inhabitants. The result is amazing. Among the principal items of food and drink used in 1898 it is estimated that there were consumed about 49,000,000 bushels of flour, 450,000 tons of meat, 150,000 tons of fish and 30,000,000 oysters, 800,000 tons of potatoes, besides several millions of bushels of onions and other vegetables, 6,000,000 bushels of fruit, 40,000 tons of butter and about as much cheese, 32,000,000 dozens of eggs, 49,000,000 gallons of fresh milk and 6,000,000 of condensed milk, 198,000,000 gallons of beer and 33,000,000 pounds of tea.

A successful experiment was made at an early hour February 10 at Riverside, Cal., with E. A. Meacham's hot water frost protection plant, in the presence of Forecast Official McAdie of San Francisco and several members of the Riverside Horticultural Club. The idea is to raise the temperature in orchards by turning hot water into the furrows. The plant consists of a 12-horse-power boiler placed under the level of the flume, and so arranged that water may be delivered with or without pressure. There is an auxiliary 5-horse-power boiler for burning oil with a steam jet.

STOVE EXHIBITS AT DULUTH.

The stove trade was very creditably represented at the annual convention of the Minnesota Retail Hardware Association at Duluth on the 14th and 15th inst. Some manufacturers went to considerable expense in making exhibits of their products. The Spalding Hotel was selected by part of them as the most suitable place for this purpose, while others arranged their goods in the gallery of the convention hall in the Armory, which was well adapted for the purpose.

The Art Stove Company of Detroit, Mich., had a large parlor at the Spalding Hotel, which they converted into a decidedly businesslike sample room. They showed four of their finest hard coal base burners, a high art wood base heater. a high-class soft coal heater of novel construction, new and handsome cast ranges and cooks, three styles of steel ranges and two massive oak stoves, all of them bearing the name Laurel as part of their designation. All the base burners have special features, all being supplied with ventiducts and all having detachable cast pipe collars. The Art Laurel, 100 series, have a sheet steel draft flue from the base to increase the radiating surface. The Art Laurel, 14 and 16 series, have the rear flues running up from the base completely separated, also to increase the radiating surface. The new soft coal heater, named the Twentieth Century Laurel, is fitted with a register grate which admits air to the fire around its rim, thus intensifying combustion at the fire pot, instead of the center alone, and increasing the heating capacity of the stove. The other samples of the company's products also have special points which are worthy of the investigation of dealers. Charles Campbell, secretary of the company, was in direct charge of the exhibit, with a very competent assistant in the person of Geo. F. Perkins of Minneapolis, who represents the Laurel line in Minnesota.

The Brand Stove Company of Milwaukee, Wis., also made an exhibit in the Spalding Hotel, occupying the sample room known as Big 6. They showed quite a number of samples of their goods, making an imposing array. The samples included Brand's Admiral hard coal base burner, Brand's Capitol hard coal base burner, Brand's steel range in square style, Brand's steel range with a high shelf and reservoir, the Midland six-hole cast range with reservoir and high shelf, the Victor five-hole cast range with reservoir and high closet, the Famous Norma wood cook, and Brand's hot air furnace, No. 724, with steel dome and low radiator. Wm. F. Hyde, secretary and treasurer of the company, displayed great enterprise in calling attention to the exhibit, having posters liberally scattered about the hotel and the convention hall. A mammoth representation of the company's trademark covered the wall on the side of the hall stairway. A good sized memorandum book, bound in fine leather, was distributed as a souvenir. Mr. Hyde was assisted in entertaining visitors by Chas. F. Riehl and Louis E. Swane, of the company's corps of traveling salesmen.

F. & L. Kahn & Bros. of Hamilton, Ohio, displayed their samples in the gallery of the Armory. C. E. Healey was in charge and was kept busy expatiating on the meritorious features of the Steel Estate cook stove, the Queen steel range, the Pet Estate cook stove, the Estate Oak heater, the Empire Estate heavy air tight, and the Empire Estate A series air tight, newly dressed for this season. A novelty shown in connection with these ranges and cook stoves was a broiler and toaster made to fit over the entire fire pot. The lids and center having been fitted in a frame specially made for the purpose, the frame is lifted up at the end and supported in its inclined position by a specially made brace. A gridiron or broiler constructed to fit the opening is then slid into place over the fire and the broiling or toasting can proceed.

The Ringen Stove Company of St. Louis also made an exhibit of their goods in the gallery. E. L. McBride presided over this display and took much pleasure in descanting on the advantages to be derived from using Quick Meal cooking goods. The samples shown comprised two samples of Quick Meal steel ranges of handsome design and substantial construction, and four samples of Quick Meal wickless blue flame oil stoves and gasoline stoves. These stoves are made with unusually strong frames and are mounted on bases which give additional strength and stiffness to the frame. The exhibit also comprised specimens of portable ovens for oil and vapor stoves and new gasoline gas lamps giving a light of 100 candle power.

J. P. Lindemann & Sons of Milwaukee, Wis., represented by C. S. Howard, also made an exhibit in the gallery of blue flame oil stoves, gasoline stoves and refrigerators.

Gruenhagen Bros. of St. Anthony Park, Minn., Northwestern agents for Eclipse steel ranges and cook stoves, Abram Cox heaters and furnaces, Bowen refrigerators, &c., distributed pictorial blotters, tied in bunches of three with silk ribbon.

GASOLINE AND OIL STOVE TRADE.

It is satisfactory to learn that, in spite of the great increase this year in the sales of coal stoves of all kinds, and the tremendous expansion in the use of gas stoves, there is, nevertheless, every prospect of a large and active trade in oil and vapor goods. The makers of gasoline and kerosene stoves have been very busy during the winter, and already some of them are booked far ahead with orders for their product. The demand is for both the evaporating and individual burner gasoline stoves, while in oil stoves there is a notable increase in the call for blue frame constructions.

The setback given to the gasoline stove trade a few years ago by the rapid and irregular advance in the price of gasoline has been recovered through the later policy of the gasoline producers in keeping prices uniform, and while it is higher now than it was some years ago there is no reason at present to think that there will be any notable further advance, and at the present cost of this fuel it can be economically used. The multiplication of gasoline motors of all kinds has very largely increased the demand for this fluid for power purposes, nevertheless every assurance is given that there is to be no marked change in the price of gasoline this year.

The A & C Registers.

Adam & Clough, 100 Lake street, Chicago, are a new firm who have entered the field as exclusive manufacturers of registers and ventilators. Mr. Adam has had long experience in this special line, having been connected for a number of years with prominent concerns. Mr. Clough is a thoroughly equipped business man of high standing in commercial circles who brings to the new firm a high reputation as a financial manager. They have placed on the market a comprehensive line of registers and ventilators of original design and artistic patterns. Their first catalogue, which has just been issued, is an exceedingly handsome publication of 16 pages, containing full price-lists of registers in various finishes, together with tables of capacities of both pipes and registers, as well as photo-engraved reproductions of the leading designs offered for the favor of the trade, the leader being their Oriental design, consisting of intertwined circles. Directions are given for setting floor registers and constructing air passages between lower and upper rooms. The catalogue is bound in heavy paper covers, green in color, with title printed in gold and black.

THE JUDSON A. GOODRICH COMPANY, 105 Beekman street, New York, have arranged to carry a complete line of Hot Air Registers and Ventilators, and are getting out their catalogue and price-list, which will be sent to all who ask for it.

FURNACE HEATING.*

BY WM. G. SNOW.

CHAPTER IX.

ESTIMATES, AND CONTRACTS.

FORMS AND BLANKS.

In laying out furnace heating work it is desirable to have the necessary items conveniently arranged on a printed form, either in an indexed book or on loose cards or sheets, which may be filed alphabetically. By the use of printed forms omissions will be avoided and the data preserved in a form convenient for reference.

It is well to make a rough sketch of the house, giving outside dimensions and showing the general arrangement of rooms and the points of the compass. The items may well include: Date, name and address of owner, location of house, name of architect, location of house in regard to exposure to cold winds, list of rooms with size and number of sides exposed, size of registers and pipes, length of hot air pipes, length of smoke pipes, clear hights of basement and floors above, square feet of exposed wall, size of furnace adapted to the estimated exposure, combined area of hot air pipes, area of air pas sages through furnace, area of cold air box. A form of data card 3¾ inches by 8 inches, used by a Boston company, is shown herewith.

In computing the cost of furnace pipes it is convenient to allow for elbows by adding a length of straight pipe equivalent in cost. Two feet of straight pipe may be considered appropriately equal in cost to one elbow of the same diameter.

ESTIMATES.

Having determined the size of the furnace, pipes and registers the cost of the job may be estimated. For an ordinary house heating apparatus the following are the principal items of expense:

Furnace (number, kind, size, diameter fire pot, portable or brick set), covering bars and man door for brick setting, smoke pipe and check damper, fire tools, pipes and registers, stones, boxes, nettings, plaster rings, floor flanges, dampers, furnace collars, covering tin or asbestos millboard, cold air box, galvanized iron cold air neck, shield over furnace, labor in erecting, fares and expenses, freight and carting, masons' or carpenters' work and materials.

An estimate for heating schools, churches or public buildings may include, in addition to the items stated above:

Galvanized iron heating and ventilating flues, mixing dampers, chains and fixtures, regulating and shut off dampers, wrought iron smoke stack in ventilating shaft, stack heater at base of ventilating shaft, steam boiler with coils in ventilating flues in place of stack heater, pipes, valves, fittings and labor in connection with same, hood for top of galvanized iron ventilating shaft.

A hot water combination heating estimate commonly includes these items:

Water heating section or coil in furnace, radiators or coils, pipes, valves, fittings, air valves, pipe covering, expansion tank and fittings, labor of erecting, painting and bronzing, fares and expenses, freight and carting.

SPECIFICATIONS.

The specifications should be clear and to the point, leaving no opportunity for misunderstanding between the contractor and the owner. The items just enumerated form the basis of the specifications, which should describe each of them fully.

GUARANTEE.

Unless expressly stipulated to the contrary it is commonly understood that the apparatus specified in a proposal for heating is to be capable of warming rooms having registers or radiators to 70 degrees in zero weather, when operated continuously as directed by the contractor.

* Copyrighted, 1899, by David Williams Company.

PAYMENTS.

On small jobs the entire payment is generally made on completion of the work; on larger ones payments are made as the work proceeds, on the certificate of the architect or engineer. In case a job is completed too late in the season to be tested in severe weather and the owner is unwilling to have the final payment construed to mean a final acceptance of the work, the contractor, if responsible, can generally secure a prompt settlement by giving the owner a written extension of the guarantee over another winter, allowing ample time for a thorough trial of the apparatus.

The custom of allowing a portion of the contract price to remain unpaid until the apparatus has been tested in zero weather is becoming less common among responsible contractors.

In heating contracts for schools, churches or public buildings a bond for the successful completion of the work is often required.

.....*Date*.....

Owner.....

Address.....

Location of House.....

Architect.....

Room	Size	Sides exposed	Reg. size	Pipe size	Length of pipes: Run off	Length of pipes: Riser el. col. damp.	Length of pipes: Total
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....

On back of card show plan of house, with outside dimensions, arrangement of rooms and points of compass.

Clear h't's B'ment.....*1st*.....*2d* .... *3d*.....*4th*.....

Smoke Pipe.....*ft.*

Exposure, Severe.....*Moderate*.....*Sheltered*.....

Total Exposure.....*sq. ft. Material*.....

Furnace; Use No.....*Rated at*.....*sq. ft.*

Combined Area, Hot Air Pipes.....*sq. in.*

Area, Air Passage in Furnace.....*sq. in.*

¾ Combined Area of Pipes.....*sq. in.*

Area, Cold Air Frame.....*sq. in*

Designed by.....

The New Vulcan Gas Goods Catalogue.

Catalogue 17, devoted to the Vulcan gas appliances for cooking for 1900, has been issued by the W. M. Crane Company, 1133 Broadway, New York, in the usual red cover for spring goods. The first picture shows the Vulcan Junior, a single oven gas cooker adapted for baking, broiling, roasting, &c., with flush top and four burners, side top shelves, and 16 inch square oven. The New Vulcan is the leader of a line of high grade family gas ranges made in several sizes with every equipment for convenience. The Perfect ranges are of handsome design, made with water heaters, broilers, high shelves, hot closets, canopies, and are described as perfect in equipment and operation. The ranges are followed by several styles of water heaters, the instantaneous type, those for direct boiler connection and powerful water heaters for supplying as much as 12 gallons of hot water per minute.

Steel ranges, broilers, plate warmers, carving tables and urns for hotel and restaurant kitchen equipment is another special line of extensive variety. Tailors' stoves, hot plates, toasters, oyster cookers, chafing dishes, coffee roasters, soldering furnaces, confectioners' stoves and

large burners for special work form another line. Gas burners, tips, tapers and taper holders, pressure gauges, brass fittings, hose service cocks and meter cocks and the Perfect gas pressure regulator are other specialties. The last pages are devoted to the Vulcan gas crematory, gas logs, fireplace radiators and hot air furnaces.

Classic Gas Ranges.

Within quaintly illustrated covers, containing 40 pages of profusely illustrated letterpress, and constituting their fifth annual catalogue, the Griswold Mfg. Company of Erie, Pa., call attention to their leading lines of gas ranges and gas cooking appliances. In offering the volume to the trade, the company state that in the few years which they have manufactured this class of goods their stoves have taken the front rank, and they have had the pleasure of numbering among their customers "the very best class of dealers, both wholesale and retail, in gas stoves in the country." They also inform the trade that it will be their aim to always improve and add to their gas line such improvementes as will keep their ranges, &c., always the best that can be made. In the pages of the catalogue reference is made to many improvements and new goods which the company have brought out, and in connection with their Classic range they state they have added new nickel door panels, improving its appearance, while to their Erie ranges and hot plates they have made many improvements calculated to render these constructions even more popular than before. The announcement is also made that the company will have several new and improved heaters ready for the coming season, and they express the hope that dealers will wait before ordering until they have seen the company's new gas constructions. The illustrations show several varieties of the Classic range, together with a description in detail of the prominent features incorporated. These features include, among others, patent cocks with adjusting screws, patent revolving lighter for top burners, flush level top, broiler high up over the oven, cast iron oven bottom and top with improved oven burners, patent roof cap burners, which are referred to as being dirt proof, compact water heater with copper coil and powerful burner, and all parts constructed in the best possible manner on the interchangeable plan. Instructions for connecting and operating the Classic range are also given, followed by a varied assortment of Erie gas ranges and hot plates calculated to meet large and small requirements. The Erie ovens are also considered, as well as miscellaneous goods, including broilers, burners, griddles, waffle irons, sad iron heaters, gas cocks, dampers and gas heaters.

William F. Greene.

William F. Greene, the well-known manufacturer of stove trimmings and one of the prominent citizens of Troy, N. Y., died suddenly on February 16, in Chicago, Ill., from an attack of heart disease. Mr. Greene was returning from an extended business trip in the West and had stopped off in Chicago for a visit to his sister, when he was seized with his fatal illness. His body was taken to Troy and the funeral took place on Wednesday from his late residence in that city. The deceased, who was 62 years old, was a life-long resident of Troy and for a period of 40 years had been closely associated with the stove trade. He and his brother conducted the Troy Stamping Works until purchased by the present concern. The manufacturing of stove trimmings and patented articles which Mr. Greene was engaged in at the time of his death, was started by him in 1890. It was very successful. Mr. Greene was a keen business man and had a genius for succeeding in all his endeavors. While the stove business in his city gradually lessened, Mr. Greene found something in it which advanced his business. At one time or another he had traversed the greater part of the country, selling his goods. Mr. Greene was a member of the Fifth Avenue Baptist Church of Troy, the Ionic Club, Commercial Travelers' Association and Post Griswold, G. A. R. He served as paymaster's clerk in the navy during the Civil War. In all his relations, business, social and religious, Mr. Greene was found the highest type of manhood. He leaves a large circle of attached friends, and is survived by his wife and one daughter. The business which he built up will be continued for the benefit of his family under the same management.

Boynton Furnace Company.

At a meeting of the Boynton Furnace Company, held at their office, 207 Water street, New York, on February 21, new officers were elected on account of the death of the former president, Nathaniel A. Boynton. The new officers of the company are E. E. Dickinson, president and treasurer; P. B. Boynton, first vice-president; Joseph Goodell, second vice-president; Wm. Ritchie, secretary; C. M. Benedict, assistant treasurer, and A. B. Marshall, manager of steam and hot water department. The business of the company will be continued as heretofore.

ODD PLATES.

THE WILLIAM RESOR & CO., Cincinnati, Ohio, are busily engaged in the production of several new Ranges and Stoves for the spring trade, which they assert will be certain to interest the dealer "every minute." A number of improvements will be made in their Gas Ranges also.

THE STANDARD STEEL RANGE & MFG. COMPANY, Cleveland, Ohio, who have recently purchased the plant of the Aurora Vapor Stove Company, will in a short time move their entire Steel Range business to above plant. Their facilities will be largely increased thereby. They will put in several large presses and other improved machinery, greatly reducing the cost of production. This will be one of the largest and most complete Steel Range plants in the country.

DAVID D. ANDRUS of Albany, N. Y., who was last year with the Pittston Stove Company, has engaged with the Cortland Howe Ventilating Stove Company, Cortland, N. Y., as their traveling representative in New York State and adjacent territory. H. F. McCann of Salamanca, N. Y., will represent the company in Ohio, Indiana and Michigan.

THE SHEFFIELD STOVE & FOUNDRY COMPANY, Sheffield, Ala., are installing new machinery in order to increase their output. The company recently increased their capital stock to $10,000.

NEGOTIATIONS have recently been concluded whereby the Ideal Stove & Foundry Company of Daleville, Ind., have passed into the hands of George Barber, Walter Barber and Frank Barber. The company were organized three years ago and have since been conducted on the co-operative plan. We understand that the authorized capital of the new concern will be $25,000. Operations will be continued just the same as heretofore, and it is stated that the old stockholders will be employed by the new owners. It is said that the new management starts out with large orders ahead and the prospects flattering for the future.

THE PENINSULAR STOVE COMPANY of Detroit, Mich., are distributing a leaflet printed in black upon heavy red paper, and bearing as a title, inclosed in a wide black border, "Your Business." At the outset reference is made to the fact that trifles are often the levers which move mountains of trade, and the company raise the question if the recipient of the leaflet or circular would be interested in a plan and proposition that would probably give him a material increase of business at a trifling cost. In response to this inquiry the company state that they are receiving many letters asking for details of the proposed methods of improving business conditions.

CAREY A. MOORE, 1727 Druid Hill avenue, Baltimore, Md., lately with Orr, Painter & Co., was in New York this week and called at *The Metal Worker* office. Mr. Moore, who has had an extensive experience in selling Stoves in the Southern territory, will probably soon be on the road again.

THE WILLIAM RESOR & Co. of Cincinnati, Ohio, have arranged with the following salesmen for 1900, who will cover the territory indicated: Charles H. Resor will act as a special, while J. W. Torrence will cover Minnesota and Wisconsin; Lewis C. Peel will visit the trade in Iowa; D. D. Devore in Illinois, E H. Fay in Michigan, J. F. Knight in Ohio and Indiana, and H. S. Brooks will look after the company's interests in the city of Cincinnati.

WE are indebted to the Phillips & Clark Stove Company, Geneva, N. Y., for a timely and interesting little advertisement in the shape of a pocket folding map of South Africa, showing in detail the geography of the region where so much interest centers just at present. Incidentally the souvenir calls attention to the Andes Stoves and Ranges made by the Phillips & Clark Company.

NOTICE is issued to the trade by the Acme Gas Stove Company that on and after March 1, 1900, the firm will be known as the Lawrence Stove Mfg. Company, and will continue to make the same line of goods as before, including the Lawrence Heaters, Hot Plates and Range Burners, and the Seneca Hot Plates and Pennsylvania Gas Furnace. The change in name seemed advisable to the company, owing to the similarity existing between their firm name and the name of gas appliances made by other manufacturers, they making no goods under the name of Acme.

THE stockholders of the Foster Stove Company, Ironton, Ohio, at a meeting held last week re-elected the following Board of Directors: H. A. Marting, O. P. Doty, C. A. Hutsinpillar, J. D. Foster, L. E. Marting, Ernest Horschel and Charles Alexander. The board organized by the re-election of the following officers: J. D. Foster, president; C. A. Hutsinpillar, vice-president; L. E. Marting, secretary and treasurer; Charles Alexander, foreman. An annual dividend of 6 per cent. was declared.

A FOUR-STORY warehouse is being put up for the Home Stove Company, Indianapolis, Ind., which will cost about $15,000, to be completed by April 1.

W. T. MCCREA, formerly employed by the Graff Stove Company, at Sharon, Pa., prior to their removal to Monongahela City, Pa., have leased a foundry in McKeesport, Pa., and will manufacture Stoves and Castings.

THE ECONOMY FURNACE COMPANY of Cedar Rapids, Iowa, have been incorporated with a capital of $50,000, for the manufacture of Furnaces. The incorporators are A. T. Averill, G. B. Dutton, E. R. Swan, W. H. Durin and G. M. Averill, all of Cedar Rapids.

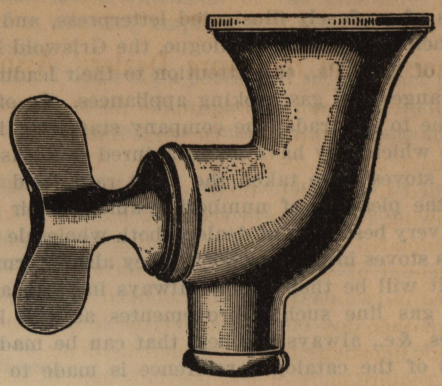
THE new works of the Youngstown Gas Stove & Range Company, at Haselton, Ohio, are nearly completed and are expected to be ready for operation about April 1. The Youngstown Iron & Steel Roofing Company are covering the building with siding, and also putting in their Buckeye metal trough flooring. An elevator will be installed by the Marshall Elevator Company of Pittsburgh.

Charles W. Hauck.

Charles W. Hauck, who died at his home, 35½ West Main street, Springfield, Ohio, on February 18, was one of the best known business men in that city. Mr. Hauck was born in Springfield, March 24, 1854. In 1868, when 14 years of age, he went to work at the Mast, Thomas & Co. shops. Here he remained until he was 21 years of age, when he and his father, Lewis Hauck, bought out the stove and tinware store of Edward Dietzel in 1875. The next year the partnership was dissolved and the son continued the business. In 1882 he bought the property at 35 West Main street, and in 1886 moved his business into it. On May 9, 1878, he was married to Miss Anna Kold, who with seven children survives him.

Sanitary Cream Separator Faucet.

The accompanying cut shows the Sanitary cream separator faucet, made by the Clark Novelty Company, Rochester, N. Y., who call the attention of cream separator manufacturers to the fact that this faucet is made entirely of cast brass, with metal seat. There are no

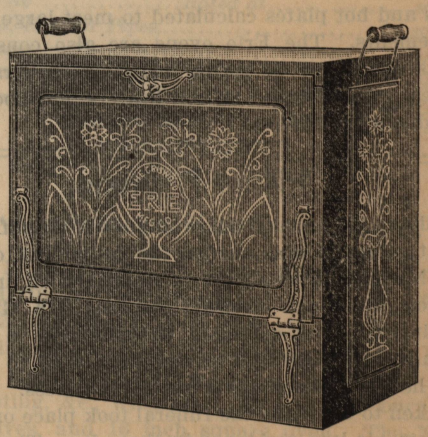


Sanitary Cream Separator Faucet.

fiber or leather washers, and so it is referred to as an entirely sanitary article. The company also make many other styles of milk can and cream separator faucets, which is a specialty to which they have given much attention.

New Erie Oven.

We present in the accompanying illustration a general view of the new Erie oven, which has recently been placed upon the market by the Griswold Mfg. Company of Erie, Pa. This oven, it is pointed out, possesses some rather novel features, special attention being drawn to the strong malleable iron hinges and catch, which, it is claimed, cannot break or rust out, and which are finished in nickel plate. The oven is lined with asbestos throughout, is of embossed polished steel, has improved sheet steel racks, and is ventilated in a way which the manufacturers claim renders baking perfect. In regard to the



General View of New Erie Oven.

iron hinges and catch, which are often weak points in oven construction, the manufacturers state that these devices hold the door so that it cannot become loose, and that the wire for holding up the door, giving the latter when open the function of a shelf, is fastened to the hinge, while the other end passes through the front of the oven, thus being entirely out of the way. The oven rack is constructed of strips of sheet steel which are folded into channel bars, the ends of the bars being double folded into cross strips so that they cannot come

out. In operation the heat strikes the circular piece in the bottom of the oven and is deflected up into the oven, passing through holes in the ends of the lining, then around the lining and out of holes in the top. The oven measures 20½ x 18 x 13 inches, and has inside dimensions of 19 x 12½ x 12½ inches. The manufacturers state that the features of construction embodied in this oven have rendered it very popular with the trade and that they have effected large sales of it. The company also point out that they are having a large sale on their Classic ranges, as well as on their Erie ranges and hot plates.

Illinois Retail Hardware Dealers' Association.

We give below the programme for the meeting of the Illinois Retail Hardware Dealers' Association at Peoria, February 27 and 28 and March 1. The association had expected to complete their labors in a two-day session, but owing to failure in sceuring hall for night session, contemplated to be held on evening of 27, and too large an amount of work before the convention to be accomplished in two days, they felt obliged to extend the meeting another day on account of the large number of important questions to be considered. Some of these questions require more or less previous investigation, and for this purpose the Executive Committee decided it advisable to name a special committee, thus giving them ample time to bring the following subjects before the convention in tangible form: Lien Law, Bankrupt Law, Peddlers' License Law, Parcel Post, Catalogue Houses, and Department Stores. The committee having these questions under consideration consists of Daniel Holden, Bloomington; G. R. Lott, Chicago; S. R. Crissey, Marengo; Jacob Bailet, Edinburg; D. McLaughlin, Chicago; William Bittel, Peoria, and H. G. McCormick of Centralia.

Great interest is manifested by the trade in the coming meeting and every effort is being made to make it of such importance to the dealer as to return his expenses many fold before the end of the year.

With the enthusiastic assistance of the Peoria retailers and manufacturers as well as jobbers the association is endeavoring to arrange an entertainment which will form one of the pleasant memories of a lifetime and send visiting members home recuperated in mind and body as well as enthused with the forces existing in the bonds of fellowship.

THE PROGRAMME.

On Tuesday morning, 27th inst., at 10.30 a.m., there will be a meeting of the Executive Committee at Fey Hotel. The convention proper will open at 1.30 in the afternoon, when an address of welcome will be delivered by Mayor Lynch, the response to which will be made by Vice-President McLaughlin. The president's annual address will follow, after which the usual reports will be read and committees appointed.

On Wednesday morning the first business will be the reading of a paper entitled "Do Mercantile Interests Demand a Change in Our Monetary System?" by F. E. Bonney of Paxton. Ten-minute talks will follow on the subject of jobbers and manufacturers as competitors with retail dealers, after which there will be a discussion on revision of constitution and by-laws. Another paper to be presented at this session is entitled "Do Present Trade Conditions Demand a Revision of Import Duties?"

The Wednesday afternoon session will be for members only, and will be opened by papers on "Local Organization and Its Benefits," by W. J. Krueger of Chicago, and William Bittel of Peoria. George A. Engelhardt of Chicago will follow with a paper on co-operative buying. Another paper to be presented at this session is by President Miller and is entitled "Trusts, Combines, Catalogue Houses and Department Stores, or Signs of the Times Regarding Retail Interests."

Wednesday evening the banquet to visiting dealers will be given.

The closing session on Thursday morning will be inaugurated with a memorial address by W. B. Costello of Chicago. Officers will be elected for the ensuing year, and the place of 1901 meeting selected. The Committee on Plan of Operation for the Ensuing Year will also make its report. The afternoon will be spent in sightseeing.

Missouri Retail Stove and Hardware Dealers' Association.

The attendance at the second annual convention of the Missouri Retail Stove and Hardware Dealers' Association at St. Louis showed some increase on last year. A good representation of the manufacturing and jobbing interests was also on the ground, so that the enthusiasm which numbers always create was not lacking. The Lindell Hotel was selected as the headquarters and place of meeting.

Tuesday morning was passed in the enrollment of members and the payment of dues, except that a meeting of the Executive Committee was held at which considerable business was arranged to be presented to the convention in due time.

The opening session was called to order shortly after 2 p.m. by President J. W. Poland of Carrollton, who immediately proceeded to read his official report. E. Thomas of Trenton, secretary and treasurer, read his report, showing a growth of 50 per cent. in membership during the year and a satisfactory balance in the treasury.

The convention elected P. E. Harney of Joplin president for the ensuing year, and B. F. Naylor of Marshall vice-president, deferring the election of the Executive Committee until Wednesday.

Committees were appointed to attend to various matters. The constitution and by-laws were also revised in several important particulars.

A paper was read by B. F. Naylor entitled, "Why Should Retail Dealers Belong to Our Association," and an interesting discussion was brought out by a question propounded by the secretary, "What effect have the advances in prices had on the retail trade?"

The convention was in session until Thursday noon, having an extensive programme to be carried out.

The members and their friends were royally entertained by the Retail Stove and Hardware Dealers' Association of St. Louis, as well as by the local jobbers and manufacturers.

A National Retail Hardware Association.

Z. T. Miller, Bloomington, Ill., president of the Illinois Retail Hardware Dealers' Association, is moving actively to secure full representation of the different State associations at a conference to be held at the Sherman House, Chicago, March 12. It is anticipated that there will be a good representation of persons actively identified with the movement. The questions before the conference will be in regard to the desirability of forming a national association, and if so, the lines on which it should be constituted. The following call for the meeting has been sent out by Mr. Miller to representatives of State and local associations:

Meetings of the national conference of retail Hardware dealers' associations will be held at Sherman House, Chicago, commencing March 12, for the purpose of developing and inaugurating a uniform policy upon all issues over the entire organized territory and to consider the question of national association. Meeting rooms will be open for reception and informal meeting of delegates at 10 o'clock a.m.

Temporary organization will be at pleasure of the delegates after 2 o'clock. Each State represented by properly accredited delegates to be entitled to two votes until the question of representation shall be disposed of by permanent organization.

The conference was arranged by correspondence with

all the State associations, as far as the proper address of their officers was known, as follows: Ohio, Indiana, Michigan, Illinois, Iowa, Wisconsin, Minnesota, North Dakota, Missouri, Kansas, Texas and Pacific Coast, most of which have already arranged for representation at conference.

All State retail Hardware dealers' associations, or local associations where no such State organization exists, are invited to send representatives and participate in the meeting.

Have just learned of special jobbers' railroad rates to Chicago at various times through March, and we may possibly arrange to change date so as to give delegates benefit of this rate. Will advise you later if date is changed.

Address all communications and advices of the appointment and names of delegates to Z. T. Miller, president Illinois Retail Hardware Dealers' Association, Bloomington, Ill.

The Iowa Retail Hardware Dealers' Association.

An interesting feature of the convention of the Iowa Retail Hardware Dealers' Association was the Question Box, which called out from the members descriptions of their business methods in a good many directions. Many practical suggestions were thus obtained. We give below the substance of some of the discusssions:

6. *Is it best to mark goods in plain figures or characters?*

Mr. Meredith: I have tried both ways. I have concluded that marking in characters is the better way.

Mr. Huston: From what little experience I have had in the retail Hardware business, and from my experience on the road, I find that where dealers in a town get along nicely together, plain figures are all right. I find it easier to sell goods by marking them in plain figures.

Mr. Nelson: We sometimes have cash customers, and we cannot give the same prices to the long winded ones that we can give to a man that pays spot cash.

Mr. Cole: We find the plan of marking in plain figures the best; and as a safeguard against long time customers, we mark the goods with the long time price, and if we find some fellow that is a very good customer, who wants to pay cash, we give him a reduction. If they are marked in characters he is not sure whether he is getting a reduction.

Mr. Lomas: I have been in the Hardware business 25 years and all that time we have marked in plain figures.

Mr. Currie: A year ago I stated I was in favor of plain figures, but on account of the recent changes in prices I now mark in characters.

7. *What is the best method of handling the stove repair business?*

Mr. Pamplin: I would suggest that you have your Stove repair catalogue convenient and when a man orders Stove repairs, be sure he gets the date and number of the Stove right. Before you send the order oblige him to make a deposit to cover loss in case he does not come for it. I think where you lose money in the Stove repair business many times, is in cases where you order repairs and the parties do not come back after them.

Mr. Currie: I don't think we have a line in our store that pays us as well as Stove repairs. The way to make Stove repairs pay is to attend to them. If you get Stove repairs that are wrong, that don't fit a Stove, immediately return them; but it is a profitable line in our business because we attend to it. We never ask an advance even of a stranger on Stove repairs, but the essential part of it is to attend to it, and when you get your order, be sure that you order it and have it within the quickest time possible.

Mr. Thorley: The trouble in the Stove repair business is to find out certainly what kind of a repair is wanted. If a repair comes all right and fits the Stove, then there is generally no trouble in making collections, but if the dimensions are wrong they don't want to pay for them. That mistakes may be properly placed and that those that make them pay for them, after the description has been made, and compared with the catalogue to see whether his description compares with the catalogue number, we have him sign his name to it and place it on file. If it comes that way, it is his mistake. If we order it and it is not sent correctly, we expect the Stove repair house to stand the loss.

Mr. Miles: I have a special Stove repair book, devoted entirely to Stove repairs, nothing else. When a customer comes in and orders repairs we get out the Stove repair book and first write down his name and address, street number, if it is in the city; take the name and number of the Stove, and the date, if possible, and enter the order for the repairs wanted, and two or three times a week, depending upon the number of orders accumulated, we order from a Stove repair company as follows: "Please ship us at once, via ——— the following repairs." We make an exact copy of that order as entered on the book, including the customer's name and all. We continue until we have completed all of the order in that way; then we take shipping tags and on the blank side make an exact copy of the orders, one on a tag, and inclose those tags with the orders, with the request that that tag be tied to the bundle of repairs to which it belongs. When the repairs reach us, made up of perhaps a dozen different items, we cut the bundle open and find each one of the separate orders to which has been attached the proper tag. We find it only necessary to weigh the castings, put the price on the tag and the trouble is over.

8. *What is the experience of the members on easy payment business?*

9. *To what extent can easy payment business be done by retail dealers, how much advance can the dealer get over regular cash prices, and how do you keep track of the time payments becoming due when sold on the installment plan?*

10. *What form of lease is best to use for time sales on Stoves and Refrigerators, and do you have to apologize when you ask a party to sign it?*

Mr. Perrin: I did business as a general manager for the Singer Mfg. Company about 12 years, and, as you well know, the Singer Mfg Company do a great deal of lease business. Now they have several plans that were quite successful that we have personally adopted in our line of selling Stoves. One of their plans was to ask a little bit more for goods on the lease plan than upon the cash plan, and if the lease was paid within a given time—regulated in different localities—to give them some discount back, and if not paid within that time the machine would cost them more money. They drew up a rigid lease applicable to each State, and the lease was made on the easy payment plan. This was the successful part of it—there was a good collector behind it. That was the real success with the Singer Company's leases. Whenever that payment was due, if it was not paid, the collector was there, and the most successful men that we had were the men that would talk that thing positively and plainly when the lease was made. We did not give them an idea that they could simply take the Singer Company's goods and use them as long as they wished, and that they need not pay hardly any money ;that is not business. The best men would say that we want that payment, be it ever so small. It has been suggested that we would have to apologize to the parties in asking them to sign a lease. I don't think so. Why, it is a matter of business. If a person comes to me and wants my products, and he asks me for time upon that product, is it proper and right that I should explain to him why I want a lease signed, when it is supposed I don't know anything about him? I must have a good payment to secure and guarantee good faith in this purchase. In our business we do not extend the time longer than six months; it makes no matter what the purchase is. We prefer three if we can get it. That is what we strike for. What kind of a lease is best? We have a lease that is practically not a lease, and still it is one. It is a bill of sale from the customer, selling the goods back to us. I make the sale over to him. I take a bill from him, buying that article from him for a certain amount in that bill of sale; it provides that he shall have an article at a certain street number, and in case he moves he should notify us; that the bill of sale is given to us to secure a certain book account of a certain amount, and when that book account is paid in full the bill of sale becomes null and void. I think I got it from the Singer Mfg. Company. I think it is the best form for the State of Iowa.

Mr. Duncan: We do not record our leases, but we find it a very easy matter to get the money on lease accounts; very much easier than it is on open accounts. We usually get more for goods when we sell them on a lease. We have a good deal of mining business with men who get their money every month. They only pay us so much per month. I find there is this interest taken in the matter of a lease: Occasionally a man will want to pay something on his lease account, and if he has at any time got something charged to him that is not in the lease, he would want this credit applied on the lease. Then when he has paid the amount of the lease he wants to take up the lease. If he has an open account he wants to leave that to the last. The lease stimulates the payment.

Mr. Duvall: In selling goods on a lease we charge about 10 per cent. more than we would if it was cash. I find it works very well. I like the plan very much. I find one drawback to the lease; a great many who buy anything on a lease plan think they have established

a credit, and we find some difficulty in that regard; but I think the lease plan is good and is a protection.

Mr. Thorley: We have done a little lease business, and it has been very satisfactory. I made inquiry of those who had sold on the lease plan, and made inquiry about the different forms of leases used, and prepared one and submitted it to an attorney in our town. He said the form that we had prepared was all right; that it was only a lease, and the parties could not mortgage the goods, and that I could get my property without the process of law. We get more for our goods on a lease plan than the cash. We price them high enough, and allow a discount of 10 per cent. I have found that parties who understand it are very prompt about their payments. Most of the business I have done in that line has been with Sewing Machines. I find there are very few Sewing Machines in our country that are sold in any other way.

Mr. Perrin: I don't think it makes much difference what the form of lease may be, but we have a law in the State of Iowa that unquestionably allows you to take a piece of property where the lease is not recorded. There is no question about the law in the State of Iowa. At the same time, right in that connection, the lease business is a good business. We do not lose any money by it.

12. *How can a show window be kept transparent in zero weather?*

Mr. Doxsee: I don't know of any method except to occupy a store on the north side of the street.

Mr. Noble: I know of a case where back of every display window was put false glass, right in line with their store, and a hole was cut underneath the window to bring in the cold air from the outside. There was no frost on the windows, though it was on the south side of the street.

Mr. Duncan: There is another remedy. If your store rooms are heated by a hot air furnace, with proper circulation, you will never have any frost upon the windows.

Mr. Bower: It is almost impossible, as I have found it, to keep the frost from a store that is heated by a stove. If a party will put in an extra partition back of his window, and carry two cold air ducts (they may not be over 6 or 8 inches) directly to the furnace, creating a circulation of air, and put some small holes in the outside of the window, forming a circulation in the window, the window will consequently be cold all the time, and the glass will always be clear of frost.

Mr. Gillette: There is one point that we failed to touch upon in the subject; that is, keeping the atmosphere inside the store dry. We do not allow any moisture in the store, and we have had no trouble with frost on the windows.

Mr. Dabney: I noticed some time ago an article upon this subject. It referred to a solution to be placed upon the windows to prevent frost. I have forgotten the ingredients. I think it was a preparation of glycerin, mixed with something else.

Mr. Hillman: I don't think there is any rule that will apply to all cases in this matter. I think the location and all that sort of thing has got to be taken into consideration.

13. *What questions should be asked a stranger who is asking credit of a dealer?*

Mr. Mattes: In different localities it is probably different. The class of customers in most small towns are farmers. If they are land owners we do not ask them any questions. If they are renters we look them up and find what their standing is financially. If the landlords own them body and soul we make them protect us. We look up the records of the land owners in the county seats to see if there are any mortgages on file against their property.

Mr. Miles: My experience has been that occasionally a customer of that kind takes offense at an inquiry of that kind. We find where they do that the party usually proves to be an undesirable customer. If a man appears to be young—under age—I make inquiry as to his parents and family connections. If he is not a young man under age I ask him if he is married, and ask him how long he has been in a place. If he has just come I ask him where he is from and how long he remained at his former place. If he has moved often I don't want much to do with him. If he is a minor and has no property then I ask for reference. We find that minors are becoming very good customers. We do not lose very much by them. If he is a farmer and a renter we try and find out if he pays cash rental. If he pays a cash rental we are careful about him. If he pays a grain rent we feel more like trusting him; then we have a fair lien.

Mr. Duncan: I don't see any reason why we should not make a business proposition of a request for credit. I don't see any impropriety in asking a man who asks you for a favor on what grounds he asks the favor, or what the conditions are that he can meet the payment—if he can fulfill his promise. If a customer comes to you and says "How much time will you give me on these goods?" that is a matter for you to determine. How much time do you want? How can you arrange to meet this? What terms would be satisfactory to you, or would enable you to meet this? And getting his opinion—what his ability is to pay, and having an understanding, certainly is better than saying "Oh, yes, you can have this, pay as soon as you can."

The President: There is the thing boiled down in a nutshell. It is a business proposition. Make it a question of business, not sentiment. There is where we have all made our mistake in the past. When a man asks you for credit ask him what ground he has for asking credit.

14. *Should there be but one credit man in a retail store?*

(The president requested those present who allow their clerks to extend credit promiscuously to rise. A number of the members rose to their feet.)

The President: In my business we have made it a rule in the past year or two, since some of these questions have been brought to our attention, that that should be the rule of the house; but in spite of rigorous requirements we find our clerks constantly having a tendency to extend credit on very loose lines. Let us see that this doesn't occur in our business in the future.

15. *Should a definite term of payment be fixed when extending credit?*

Mr. Henderson: If you mean extending credit to a stranger the first time, it is all right, in large amounts, but where a man comes in and wants two pairs of Hinges.

The President: I don't think the question applies to little items of that kind.

Mr. Henderson: Then I would certainly have a fixed time.

Mr. Fitch: When a man says "I want to pay you in such and such a time," I ask him where he expects to get the money at that time. He may say he has some hogs to sell—makes some statement of that kind. When that time is up I ask him about it. If he has sold his hogs then it is time to get after him. If you leave this question open and don't find out what he expects to realize his money from, he fools along and you cannot find out anything about it. When he makes a specific statement in regard to that you have a chance at him.

The President: Mr. Breckenridge, is it your practice in giving a definite time of credit to make a memorandum upon the charge?

Mr. Breckenridge: It is as the man says, if you leave it open account, and he says I will pay you some day, he never gets to the time of payment.

A Member: I would say in regard to asking payment at a certain time I adopt this plan: I am doing business in a place where I have lived a good many years, and there is not any one I am not pretty well acquainted with. If I run an open account with them I have at the time I make the sale an agreed time in which it shall be met. If they do not meet it I ask for a note, and when the note comes due I will try and collect the note.

Another Member: I find that a note is not worth any more than an open account; simply because a man that is so willing to give his note will always say "He has got my note and that is all he wants." I don't consider a note worth anything in certain instances.

16. *How large an account should be opened without requiring a note, and should notes draw interest from date?*

Mr. Mattes: That depends entirely upon what a man is doing. I have an instance in mind where I furnished a man his entire bill of Hardware, Plumbing, Furnace, &c., for a house and he owed me $1100. When he got through I asked him for money and he gave me $800.

17. *Is it safe to trust or to sell a furnace to anybody, no matter how good, without a written contract of payment?*

Mr. Mattes: I should say no, because you might have a man in Des Moines putting in a Furnace in a new house. He may be working on a salary, and the house may cost him more than he had any idea when he got through, and the lien would possibly come to more than you could get out of it at forced sale; but in the country if a farmer puts a Furnace in a house his farm is good for it.

The President: Take the question of guarantee and the abuse of it by the purchaser, no matter how good he may be—on an open guarantee, where the terms are not specified, down in black and white.

Mr. Mattes: My experience has been this, if a man has the money to pay for his Furnace when he buys it it

works all right. In selling Corn Shellers my experience has been when they are sold on time, without a personal guarantee of the account, you are liable to have complaints. After the machine is settled for it usually works.

The President: Here is a question we will take a rising vote on. This is a general rule, not an exception:

19. *Is it ever safe to trust a man who says he will pay Saturday night?*

(All rose.)

20. *When a man pays up his account in full should he be given a present?*

Mr. Mattes: That depends on the class of people you have in your community. If you have a lot of Germans they expect it. If you once commence it you cannot give it up.

Mr. Wheelock: We have been in the habit of giving Pocket Knives to customers that dealt with us right along. As the gentleman says, it grows on us. When I give a man one I tell him to give me all his trade.

Mr. Meader: In regard to this Pocket Knife business, in the last few years I have given away several gross of Pocket Knives. Some time ago a friend said to me, "If I were in your place I would go over into the other trade." I said, "What would you do?" He said, "I would give away pocket books instead of Pocket Knives, and you will affect the grocery trade and dry goods trade and not the Hardware trade."

Mr. Mattes: I have found calendars the best advertising scheme I have ever had. I bought some good calendars. I did not give them out promiscuously, only to good customers. I have found in the last few years people would come and buy three or four dollars' worth of goods just for the purpose of getting that calendar, and I know of several instances where the profits on the goods I sold the people would pay for quite a number of calendars.

21. *Is it best to mark the selling price of goods in odd cents?*

Mr. Kurtz: It is only good for the department store and not the Hardware dealers. I don't think it would be advisable for Hardware dealers to go to work and adopt any scheme of that kind.

Mr. Doxsee: I don't use this plan in marking goods in my stock, but one or two years during the dull season in summer I have made special sales of some kinds. In many instances I have advertised in the odd cents—simply for those special sales, and I find that it has been profitable to me in the way of general advertising as well as for these special sales alone.

The President: Has any one used classes of goods that come up against the "Beehives" and "Racket" stores and department stores and marked the odd cents just as the other class of stores do? What has been your experience in this class of goods only?

Mr. Perrin: I happen to have a "Beehive" right next to us. I got some Wash Boilers, the cheapest I could get, so that they could be sold readily at a very low price. The beehive had Boilers sitting outside marked 63 cents. We did not put ours outside and put a price on them, but if anybody wanted a Wash Boiler of this kind, ours were 60 cents, 3 cents below. If we saw a person who had bought one of the 63-cent boilers, if we could we would ask him what he had paid for it. When he would state he had given 63 cents for it we would tell him he could have saved 3 cents by calling on us.

Mr. Sheldon: I don't like that kind of competition. I don't like to advertise somebody else's business. I don't pay any attention to those beehive stores or advertise the odd cents.

The President: On low class and other cheap grade goods running below 50 cents—things of that kind, and goods that you have to offer to meet this class of competition—my experience is that there does not seem to be any objection to using this class of goods in that way, but as to the bulk of our stock, I don't favor marking in odd cents. If you keep a line of goods to meet this racket store competition there are lots of times when you have to mark them in odd cents. If you want to keep those racket store goods you want to hold them back and sell them for what they are.

Mr. Mattes: My opinion in selling those cheap goods would be entirely different in a large place where you have a large amount of floating trade, than in a small place where people are acquainted with you.

22. *What is the average cost of blacking and setting up Stoves, and how do you figure it in the marked cost, in towns of 3000 inhabitants?*

Mr. Henderson: $2 about covers it. It depends on the size of the town.

Mr. Duncan: I would say 75 cents would cover the cost of blacking and setting up a Cook Stove.

Mr. Miles: I have always added $1 to the cost of a Cook Stove and $1.50 on Base Burners.

The President: How many parties present, in marking the cost of a Stove, add anything to the marked cost of your goods when they are on your floor, in figuring your profit? All who do rise to their feet. (Quite a number of delegates rise.)

Now, gentlemen, I have lately adopted this plan.

Mr. Perrin: We also add freight to the cost as well.

The President: What do you consider the average cost in Burlington and larger towns?

Mr. Perrin: An average Cook Stove I cannot black and get to the consumer's house, including one joint of Pipe, for less than $1.50. Now, when we are having Cook Stove sales and the Stove does not come onto the floor of the house, that is a little less expensive.

The President: What do you figure for a Base Burner?

Mr. Perrin: I cannot put them up for less than $2.

Mr. Starr: I would like to ask if the 5 per cent. is added to the cost of goods that you get off for cash. We do not get this until April 1. For instance, we had a shipment of Stoves in to-day; we place them on the floor and the cost of them is regardless of the 5 per cent. Now, do we take that off when we mark them?

Mr. Mattes: I should say that the 5 per cent. had nothing to do with the cost of the goods. If I am able to take the benefit of that 5 per cent. I put it down in my pocket and nobody is the wiser for that.

Mr. Peterson: I figure the same as the gentleman who spoke last. We figure the cost of a Cook Stove about $1.50, and the same on an Oak Stove; and on a Base Heater about $2. Of course we never figure our discounts.

A Member: What do you pay for drayage as a rule?

Mr. Peterson: 25 and 50 cents. In Council Bluffs we always keep delivery wagons, but the stuff from the depot is brought up by the transfer company.

23. *What is the gross per cent. cost of doing business that should be added to the first cost of goods?*

Mr. Miles: In figuring up my percentage of cost in making my estimate, I took the gross sales and figured all the expense, including my own salary (as we are incorporated), adding the insurance and all the total expense. My expense last year was practically 12½ per cent. of the gross sales.

Mr. Perrin: What our per cent. is I cannot exactly say. I think, however, it is about in the neighborhood of Mr. Miles' estimate.

The President: A number of us were figuring over the average expense of doing business on the train coming here, and, as far as I could learn, it was about 15 per cent.

32. *What should we do when a customer comes into our store?*

The importance is right here: All the money we spend for advertising, all the money we spend for making our store attractive, or the effort we put forth in carrying large lines of goods; all the money we pay out for goods that lay on our shelves for long periods of time—all things look forward to one thing—having the customer come back. I would like to take up this question of what the proprietor or his clerks should do when customers come in the store to buy goods.

Mr. Duncan: I have not had any special thought upon the matter. I remember one time a customer of mine from Bethany, Mo., went into St. Louis, and while there he was introduced to the proprietor of a very large business house. He told me after his return home to Bethany that he had gotten full compensation for the expense of his trip in his talk with this business man. In the first place he gave me his idea of how a proprietor should act to a customer. He says, as a rule, a person who comes into your store is attracted by some effort of yours; that is to say, he has seen your advertisement, or somebody has recommended him to come to you; and if he receives cordial treatment he is more apt to come back than if he did not. He says, one of the important things for the business man to do is to meet the customer personally—meet him at the door if he can, and make him welcome by a hearty shake of the hand. Never fail to shake hands with every man that comes into your store, and make him feel at home and feel welcome. If he wants to buy something and you cannot wait on him yourself designate somebody to wait upon him, and say to the clerk: "This is Mr. So and So, give him our best prices."

A great many men pride themselves as being expert buyers. That is a very good faculty to possess, but he learned from this large jobber that it was of more importance for the dealer to have the article that was called for than to be without it because he had not found a suitable opportunity to buy it at a price that he thought he could buy it at. It was better to have it and pay more for it.

Another item he learned of vast importance was the necessity of making an effort to sell something. You have all heard of the story of the man who sold clothing. He said that when he sold a suit of clothes to a man that did not want a suit of clothes that was business, but when he sold a suit of clothes to a man that wanted a suit of clothes that was not business.

33. *Do Dealers obtain a good profit on Stoves?*

Mr. Pamplin recommended that the members stand firm on the prices. He believed that it was as easy to sell a good Stove as a cheap one; that in selling Stoves it is best to say as little about the guarantee as possible. The president read an advertisement of a Stove dealer in St. Louis, offering Ranges at a very low price, and asked members for an explanation of how they could afford to offer Stoves at such a low figure.

Mr. Fitch said that some time ago he had purchased one of these cheap Stoves and placed it in his store by the side of a high priced Stove. After showing a customer both of the Stoves the customer would invariably buy the higher priced Stove.

34. *What is the best method of displaying Stoves at retail?*

Mr. Bowman recommended putting the Stoves on trucks, the cost of which is comparatively small. They could then be moved quickly and the display changed. If a customer wants to see a Stove, it can be moved out into the middle of the floor and turned around on all sides and every point seen.

Mr. Collins: I would advise putting them up on a platform painted red; there is more contrast. I think the platform far superior to the trucks. Most of the large dealers carry them on a platform, a regular platform standing 6 or 8 inches from the floor, large enough to accommodate the Stove.

Mr. Brelsford: I like the idea of keeping Stoves lined up nicely, keeping the lids and hangers in line. This thing of keeping them out of line is very bad, I think.

Mr. Bower: I will say in regard to the platform scheme I think I have a very good one that I use in my store. I paint my platform red. I make them all a uniform size for my Cook Stoves. I use Martin's plate casters for one end of my Stove, and then use a single wheel caster for the back end, so that I can take the front end of my Stove and move it around one way or another. The back end is fastened. I use a good size plate caster. I think the Martin caster is No. 52, the kind I use.

35. *What is a good method of preserving nickel plate on Stoves put away for the summer?*

A Member: The best method I have found is to wrap them up in newspapers and put them in a dry place.

Mr. Wheelock: We have tried vaseline for a number of years and found it a very satisfactory way.

36. *What is the best solution for cleaning nickel?*

A Member: My system is to use whiting and ammonia.

Mr. Perrin: We use aluminum bronze, buying it at the drug store. Take about one-third Japan dryer or varnish and two-thirds turpentine as a liquid; put it in a little cup, making up a little at a time. After it is applied, take a cloth and wipe off everything. It will come off the polished portion that has remained good; that which has become rusted in any way, the aluminum powder will remain. The aluminum can be rubbed readily off this smooth portion. You could not rub it readily off the rusty portion. Don't mix up more than enough for one Stove at a time.

Mr. Sayler recommended washing the nickel in hot water and drying it thoroughly afterward.

Mr. Perrin: You can buy in bottles what is called aluminum paint that answers very well. You can buy it in small bottles, probably two or three ounces in a bottle.

A Member: In buying that paint, I buy what is called pigmoid paint. That is what they use in painting these Ranges.

The Wisconsin Refrigerator Company, Eau Claire, Wis., have issued a fine 72-page catalogue of their line of Peerless Refrigerators. These Refrigerators are constructed with patent cleanable side flues to secure circulation of air currents between the ice and provision chambers. By this system of flues the air is sent completely around the ice, giving the air the largest possible contact with the cooling surface of the ice. Much care has been taken in the construction of the boxes, seven walls inclosing the interior. These Refrigerators are made of hard wood. A very extensive line is supplied of domestic sizes. The company also manufacture large sizes for the use of butchers, grocers and others, and make an unusually fine line of sideboard construction.

Ideal Ice Cream Freezer.

E. T. Mason & Co., 193-199 West Twenty-third street, Chicago, Ill., for whom C. M. Avery & Co., 161 Lake street, Chicago, are direct representatives, and W. H. Jacobus, 90 Chambers street, New York, Eastern agent, have put on the market the Ideal ice cream freezer, illustrated herewith. Fig. 1 shows the interior and working

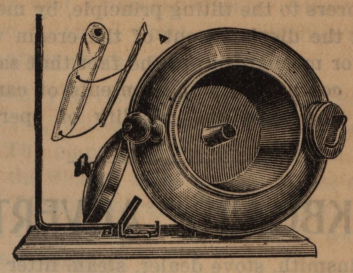


Fig. 1.—Can and Parts of Ideal Freezer.

parts. Fig. 2 represents it mounted on a board platform, which holds the shaft on which the freezer revolves, and provides a convenient means of clamping it to table or shelf in operation. The freezer is made in one size, 4 quarts, and as there is no intricate interior mechanism to occupy space, 4 quarts of cream can be frozen at a time. The metal parts are of heavy drawn steel plate,

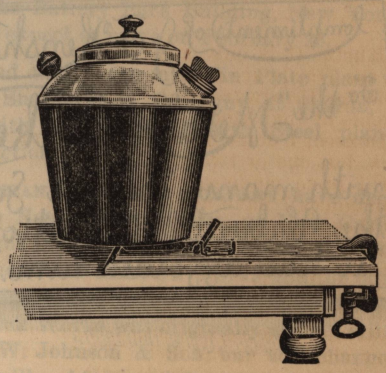


Fig. 2.—Freezer in Position to Receive Cream, &c.

retinned; the tub of indurated fiber ware in one piece, without seams or hoops, correspondingly light in weight from the nature of it, and finished a mahogany color. In use 15 pounds of ice is crushed and with 5 pounds of common rock or barrel salt placed in the outer compartment between tub and freezer through a 3-inch opening closed with a screw cap, which hermetically seals it against leakage of mixture or temperature. After the dasher

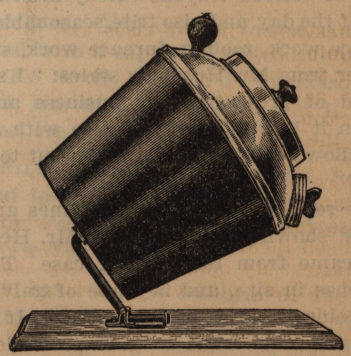


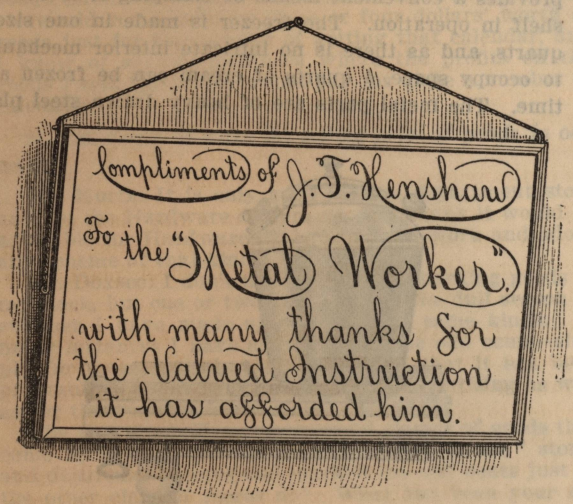
Fig. 3.—In Position for Freezing.

and pin have been placed in position the preparation to be frozen is poured in, cover replaced and freezer tilted ready for the operation, as seen in Fig. 3. By means

of the knob on the can breast the freezer is turned slowly, about 40 revolutions a minute, to the right, and, it is said, a quart of cream can be frozen in three minutes; two quarts in four minutes, three quarts in five minutes, etc. Revolving as it does on a shaft, turning the freezer requires little exertion. The well-known non-conducting qualities of wood fiber, thus keeping the cold in and the heated atmosphere out, are referred to as requiring much less ice and salt than customary and no repacking to keep the contents good for five hours or refreeze other mixtures is necessary. Special attention is drawn by the manufacturers to the tilting principle, by means of which is secured the displacement of the cream without intricate interior mechanism; to the fact that salt water cannot get in contact with the contents of can, and to the simplicity and ease and rapidity of operation of the freezer.

BLACKBOARD ADVERTISING.

If the tinsmith, stove dealer, steam fitter or a plumber will keep the attention of the public directed to his business or to him by unique attractions he will be the first one thought of when something is needed in his line of business. We have before called attention to the methods



Blackboard Advertising.

of J. T. Henshaw, 736 Thirteenth street, N. W., Washington, D. C., which have been very successful in keeping his shop and business before the public, and which has resulted in many orders being placed with him. Had he not kept continually drawing the attention of the people to him these orders would never have been received. Mr. Henshaw has for several years used blackboards in front of his place of business, and on them has written with white or colored crayons catchy information about the affairs of the day, and also trite, seasonable suggestions about cornice work, roofing, furnace work, stove repairs, &c. A letter from Mr. Henshaw states: "I still continue this method of presenting my business and have improved upon it by designing a frame with a removable back that allows one sign to be taken out to be replaced by another."

We have received one of these frames and present a picture of it, showing a specimen of Mr. Henshaw's art, just as it came from the packing case. The frame is 22 x 32 inches in size, and is made of galvanized sheet iron as becomes a loyal metal worker. It is arranged with a glass in the front to give protection from the weather to the black, white or colored paper on which the interesting suggestions are written. The back is removable, and the frame is arranged to be suspended in a conspicuous place from a wire cord. The frame presents a more finished appearance than the blackboard, and has the advantage that signs prepared for it can be presented and used as often as may be desired with frequent changes. This method of advertising gives a wide range for the ability of the artist in preparing the signs and for the display of a good deal of tact in composing them. The signs presented by Mr. Henshaw during the war with Spain attracted considerable attention, and some of them we give below:

If you would do business never cease to bombard the public mind. If our great men of war had not sent their shot after the enemy there would not have been brilliant American victories to record.

We are out with our battle ships. We are storming the business of Washington. Our projectiles are good common sense signs. They build up business.

J. T. Henshaw, advertiser and card writer, skillful in roofing and spouting, range, latrobe and furnace work. Jobbing in all branches of the stove and tin trade.

Hundreds of times we have grasped the "handle bars" of our push cart and gone "wheeling" through this city with all the dignity that honest labor could bestow upon us. Ability and push are the open facts and not the secrets of success.

Novel Method of Raising Ashes.

"Jimmie, chase yourself onto those ashes, now that you've got the chance."

"Aye, aye, sir," replied Jimmie, "soon as the Doctor gets in and I run him up to lunch."

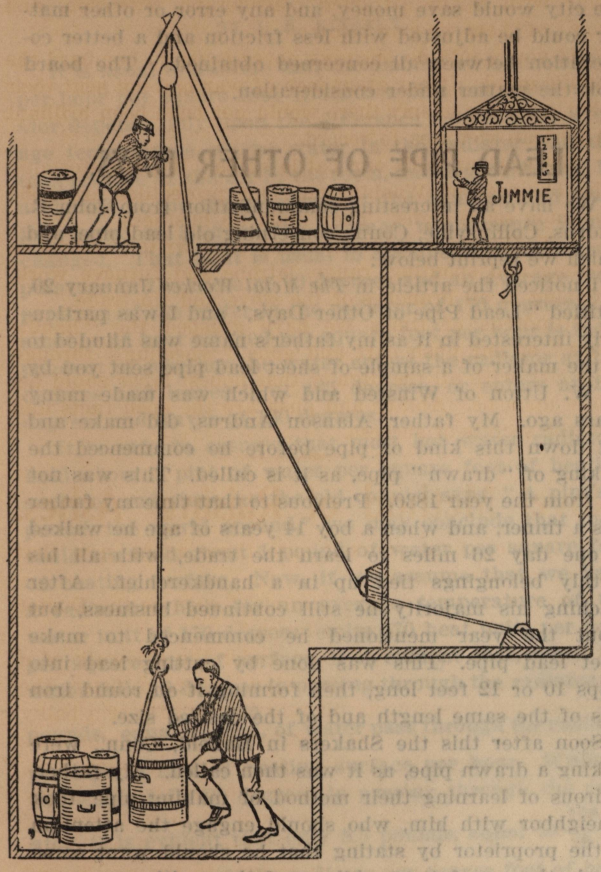
We were in the boiler room under the sidewalk of a big apartment house in Brooklyn, where a fitter, the engineer and myself were diagnosing the case of a balky old injector. Jimmie, the elevator boy, had come running down to ask the engineer a question of some kind, and the above words of command constituted the reply given him. As I looked at the from 50 to 60 barrels of ashes piled at the furthest end of the room I could not help thinking it strange work to give to the neatly and even "swelly" uniformed elevator boy of a stylish place like that. I had been accustomed to see an "extra" put on at stated times to help the fireman get ready for the ash carts, so that this looked like running things pretty closely on the part of the owner.

However, as it didn't seem to worry Jimmie much, I turned in again to further study our problem. Suddenly I saw a barrel of ashes shoot through the hole in the sidewalk, and before I recovered from my surprise another one went up. They went up so regularly and without any effort on the part of the fireman below that I had to drop what I was at and investigate. Looking up I saw a common tripod over the ash hole, with a single pulley attached. Over the pulley ran a line with an ordinary iron hook on the end. The line continued the other way down under a drum, as shown, below the sidewalk, thence to a fixed sheave and through the main wall of the building to another fixed sheave under the passenger elevator; from there it was hooked to an eye bolt on the bottom of the car.

It was up to Jimmie now, and here was where Jimmie's end of the job came in. I ascended to the first floor, and there he was sure enough, running that car up and down, at the signal which he got through the front entrance, from the boy at the receiving end of this novel system. The code of signals in use, by the way, between those two boys, while thoroughly intelligible to them, judging by the results obtained, was about as perceptible and easily understood as the average baseball battery's code. I watched the process for half an hour, and saw those 50 odd barrels of ashes landed on the walk in that time. I found out that Jimmie had a chalk mark on the wall, to which point he ran his elevator, and further, that the length of the rope varied with the weather, so that each time he started to hoist it was necessary to get his gauge for that day.

The slings used were simply bits of rope about 30 inches long, with a hook at each end, made so that they would slip into holes bored on each side of the barrels.

When a passenger wished to go up or come down Jimmie gave a peculiar whistle and the engineer below unhooked the line for the trip, hooking on again at another signal. These interruptions are few, however, as they always select a time when traffic is slack.



Novel Method of Raising Ashes.

SCRAP.

THE WELSH TIN PLATE WORKERS have put in a demand for a further increase in the wages of mill men, but the Tin Plate and Sheet Makers' Association have stated that they see no way to accede to the demand in view of the present high price of steel, tin and fuel. A committee of the employers will meet representatives of the workmen, however, to go fully into the matter. Notwithstanding that the volume of business in the Welsh Tin Plate trade is heavier than for some time past and prices of Plates are from 50 to 60 per cent. higher than they were a year ago, the manufacturers are complaining of exceeedingly slim profits, due to the increased cost of raw materials and labor. Moreover, there is little prospect of any early reduction in the price of coal or steel. The scarcity of fuel is becoming more acute each week, and the steel manufacturers have advised the manufacturers that Tin Plate Bars will be advanced in price $5 a ton in the near future.

Two of the four Black Plate mills of the plant recently leased by N. & G. Taylor Company, at Cumberland, Md., were started last week, employing 60 men.

THE AMERICAN TIN PLATE COMPANY are removing their general offices this week from Chicago to New York. C. M. Stuart will remain in charge of the Chicago sales office, occupying rooms 1115 to 1118 Marquette Building. The company's New York offices will be in Battery Park Building on and after the 26th inst. The general offices of the National Steel Company are also being removed from Chicago to the same building in New York as that occupied by the American Tin Plate Company. These companies have acted very generously toward their Chicago employees, taking all who desired to continue in their employment to New York, paying the cost of transportation for such employees and their families.

THE AMERICAN SHEET IRON COMPANY have appointed L. & R. Wister & Co. of Philadelphia their exclusive sales agents for the product of their mills, at Phillipsburg, N. J. They expect in the near future to have a Tin Plate mill ready for operation, and will then furnish both Bessemer and Charcoal Plates. Other improvements will also be made which are intended to largely increase the output of the mills.

WE are officially advised that the Sharon Steel Company, Sharon, Pa., will add a 10-mill tin plate plant to their works. The plant is to be erected by a company separate from the Sharon Steel Company, but controlled by the latter. Pittsburgh capitalists are interested, and an application for a charter will be made soon, incorporating the new company.

THE AMERICAN TIN PLATE COMPANY, Chicago, are sending the following notice to the trade: "On account of the confusion incident to moving there will necessarily be more or less interference with our correspondence in all departments, and for all delays we beg the indulgence of our customers, assuring them that every effort will be made to get back into the regular routine of business at the earliest possible date." This notice is caused by the contemplated removal of the general offices of the American Tin Plate Company from the Marquette Building, Chicago, to the Battery Park Building, New York City. The company expect to move on February 26.

IT is stated that a ten-mill Tin Plate plant will be built by the Sharon Steel Company, at Sharon, Pa., in connection with their Open Hearth Steel plant, now under construction.

THE AMERICAN TIN PLATE COMPANY have decided to dismantle the Neshannock Works, at New Castle, Pa., containing eight Plack Plate mills. Six of the mills will be added to one of the Western works and the other two will be installed in the Shenango Works, at New Castle. The Neshannock Works was originally a sheet mill, operated by Geo. W. Johnson & Son, but was changed to a Black Plate mill. Afterward it was taken over by the American Tin Plate Company.

THE WHITAKER IRON COMPANY and the Wheeling Corrugating Company, both of Wheeling, W. Va., have been combined. The two concerns were identified interests, but operated under different management. The stock of the Wheeling Corrugating Company has been increased from $150,000 to $5,000 000.

TRADE NOTES.

THE HOCKER MFG. COMPANY of Lewes, Del., have been incorporated with a capital of $20,000, to manufacture Tin Cans, Tin Boxes, &c. W. P. Thompson, W. J. Thompson, C. H. Martin, J. W. Hocker and H. R. Burton, all of Lewes, are the incorporators.

NICHOLSON FILES AND STERLING HACK SAWS are brought to mind by circulars sent out with a map of South Africa by Patterson, Gottfried & Hunter, 148 Centre street, New York.

J. F. HANLEY has resumed business at the foot of East Twenty third and Twenty-fourth streets, New York City, as a dealer in Scrap Iron, Metals and Machinery.

THE PEORIA MFG. & SUPPLY COMPANY, Peoria, Ill., have been incorporated with a capital of $20,000, to manufacture Metal Goods. C. W. O'Neil, W. W. Murphy and W. G. McRoberts are the incorporators.

THE GEORGE A. BAILEY COMPANY, Athens, Ga., started in the Stove and Tinware business last week.

Course in Heating and Ventilating Engineering at the Massachusetts Institute of Technology.

In place of the comparatively simple systems employed a few years ago we have to-day in our large buildings a variety of heating and ventilating apparatus, the proper selection and arrangement of which calls for engineering ability of a high order. The faculty of the institute, recognizing the changed conditions, aims in the new course to thoroughly acquaint men with the theory of the subject and to familiarize them as far as possible with the practical details. Most of the latter must, however, be acquired later in the offices of engineers or contractors.

As to the field for employment in this line, it may be said that, while at present there are few heating and ventilating engineers who work exclusively on a commission or time basis and do no contracting whatever, it is pretty generally conceded that this field will present gradually increasing opportunities. The United States Government and many States and cities have their corps of engineers in this department. The large heating contractors, fan manufacturers and makers of heating boilers and steam specialties have need of men well schooled in the branches included in this new course.

To men so fortunate as to combine commercial with engineering ability, good positions are always open. As the field enlarges the principal architects in our big cities will doubtless have their heating and ventilating plans laid out by their own engineers. The institute course will at first consist of a fourth year option, seniors in the department of mechanical engineering having a choice of mill, marine, locomotive or heating and ventilating engineering.

In addition of lectures covering the subject, frequent visits will be made to representative pieces of work; the men will have some shop practice in pipe fitting and much work in the drawing room making plans for different systems and computing the sizes of the various parts. The solution of the problems given will require a pretty thorough knowledge of the laws of heat, the properties of steam, hydro-mechanics and the mechanics of gases.

The course will be in charge of Prof. S. Homer Woodbridge, who for a number of years has given lectures on heating and ventilation to the students in the courses of mechanical engineering and architecture. Added to his qualifications as a teacher, Professor Woodbridge has had the advantage of an extensive office practice for the past ten or twelve years, and has been identified with a large number of important installations in a great variety of buildings. While the course is intended primarily for regular fourth year students, others having the necessary qualifications may take it up, either separately or in connection with special lines of study.

The tuition fee for full regular courses at the institute is $200 per year. Further information may be obtained from Dr. H. W. Tyler, secretary, Massachusetts Institute of Technology, Boston, Mass.

Plumbers Want Direct Contracts.

The disadvantage of being a subcontractor under a principal who has neither knowledge nor interest in the work has long been a source of annoyance and loss to master plumbers, and a general effort is being made to change these conditions whenever an opportunity offers. At the request of the master plumbers of Holyoke, Mass., the Board of Public Works gave them a hearing on February 14 on their petition that in all public buildings the contracts for the plumbing be let to the plumbers direct, instead of being included in one contract with a contractor, who sublets it to the plumbers, as has been the custom. T. J. Carmody spoke for the plumbers and called attention to the existing conditions by which plumbers are bound. The plumbers were different from any other class of men in respect to the laws under which they worked. Their work was subject to the State regulations and the regulations of the Board of Health of the city of Holyoke; and by direct dealing the city would save money, and any error or other matter could be adjusted with less friction and a better cooperation between all concerned obtained. The board took the matter under consideration.

LEAD PIPE OF OTHER DAYS.

We have an interesting communication from John R. Andrus, Collinsville, Conn., concerning old lead pipe, and which we reprint below:

I noticed the article in *The Metal Worker* January 20, entitled "Lead Pipe of Other Days," and I was particularly interested in it as my father's name was alluded to as the maker of a sample of sheet lead pipe sent you by G. W. Utton of Winsted and which was made many years ago. My father, Alanson Andrus, did make and put down this kind of pipe before he commenced the making of "drawn" pipe, as it is called. This was not far from the year 1830. Preivous to that time my father was a tinner, and when a boy 14 years of age he walked in one day 26 miles to learn the trade, with all his earthly belongings tied up in a handkerchief. After reaching his majority he still continued business, but about the year mentioned he commenced to make sheet lead pipe. This was done by cutting lead into strips 10 or 12 feet long, then forming it on round iron rods of the same length and of the desired size.

Soon after this the Shakers in Enfield, Conn., were making a drawn pipe, as it was then called. My father, desirous of learning their method of making pipe, took a neighbor with him, who should engage the attention of the proprietor by stating that he should want some pipe in the near future, while my father, with eyes open, passed around the works, closely noting the process of pipe making. It is needless to say that not long after Mr. Shaker heard that a pipe of this sort was being made in Canton, 25 miles away. The old red shop used by my father for making pipe is on the Hartford and Albany turnpike, 2 miles from Collinsville and 1 mile west of Canton street.

The drawn pipe was made by casting lead in molds 2½ feet long and ½ inch thick, different sized molds being used according to the size of the pipe to be made. This piece when cast had a center rod of the desired size, and the piece of lead when cast was tapered at one end. Then an iron or steel rod 12 feet long, which had previously been highly polished, was put through this piece of cast lead, a shoulder being made on the rod. Then with a few blows from the hammer the lead was so fastened to the rod as not to slip back when it was drawn through dies. The end of this long rod projected 6 inches and was so constructed that tongs of peculiar shape took hold of it with the piece of lead. It was then passed through dies and drawn much as wire is now drawn.

In those days the lead used was mostly imported, having a Government duty, except that which was used in the arts. Some of it came to us in the shape of large bullets in yellow pine casks weighing 5 or 6 hundredweight. Then again it was in the shape of busts, with a piece of round tin in the forehead with the name of Washington, Jackson or some other ancient celebrity. It was many of these we melted up.

Several amusing incidents occurred in the period of pipe making in the old red pipe shop, as it was called. Once several men from Collinsville, not working that day, took a stroll up to the shop, being friends of my father, and seated themselves around a kettle where was being melted these lead bullets. By accident some water had been spilled on them, and immediately a mass of melted lead was thrown upon the plastering overhead and over the men seated around, causing them to pitch backward over one another, much burned, and creating a very ludicrous scene.

The Effect of Velocity of Circulation in a Hot Water Radiator.

BY J. H. KINEALY.

It is usual to assume that the amount of heat emitted per hour per square foot of surface of a hot water radiator depends only upon the difference between the average temperature of the water in the radiator and the temperature of the air in the room, and is not affected by a change in the temperatures of the entering and leaving water so long as the average temperature is not changed. That is, it is usual to assume that for a temperature in the room of 70 degrees and an average temperature of the water in the radiator of 170 degrees, the amount of heat emitted per square foot per hour is independent of whether the water enters the radiator at 175 degrees and leaves it at 165 degrees, or enters at 180 degrees and leaves at 160 degrees.

It is safe to assume that most hot water radiators hold about 1 pint of water per square foot of heating surface; and since, as the old couplet says, "A pint's a pound, the world around," we may conclude that most radiators hold about 1 pound of water per square foot of heating surface. Now, if we assume that we have a radiator which for an average temperature of the water in it of 170 degrees emits 170 heat units per hour per square foot of surface, it is evident that, when the water falls 10 degrees in passing through the radiator, 17 pounds, equal to $\frac{170}{10}$, of water pass through the radiator per square foot of heating surface per hour. While if the water falls 20 degrees in passing through the radiator, it is evident that only 8.5 pounds, equal to $\frac{170}{20}$, of water pass through the radiator per square foot of heating surface per hour. In other words, when the water enters the radiator at 175 degrees and leaves it at 165 degrees, losing 10 degrees, the circulation through the radiator is just twice as rapid as when the water enters at 180 degrees and leaves at 160 degrees, losing 20 degrees.

The assumption, therefore, that the heat emitted by a radiator per square foot of surface per hour depends only upon the difference between the average temperature of the water in the radiator and the temperature of the air in the room means that we assume that the transfer of heat from the water through the radiator to the air is independent of the rapidity of the circulation of the water through the radiator. And this last assumption is not correct, for we know as a result of both experience and laboratory experiments that the more rapid the passage of any warm fluid, air or water, over a cooling surface, the greater is the transfer of heat from the warm fluid to the cooling surface.

Experiments of late years have shown that to increase the velocity of hot water through a tube immersed in cool water results in a very marked increase in the amount of heat transferred from the hot water to the cool water. But, unfortunately, we have not enough experiments upon hot water radiators to say how much the amount of heat emitted by a radiator per square foot of surface per hour is affected by the velocity of the water passing through it. We know that we are wrong in the assumption which we make every day in regard to the heat emission from hot water radiators, but how far wrong we are we do not know.

The circulation of the water through a radiator of a given system depends upon the difference between the average temperatures of the water in the supply and return pipes, and this difference is largely due to the cooling of the water in the radiator. A small loss of temperature in the radiator means a quick circulation through the radiator, but a small difference between the average temperatures of the water in the supply and return pipes to make the water circulate from the boiler through the pipes and the radiator back to the boiler. And a large loss of temperature in passing through the radiator means a sluggish circulation in the radiator itself, but a large difference between the average temperatures of the water in the supply and return pipes to bring about the circulation of the water from the boiler through the pipes and the radiator back to the boiler.

It is probable that we may conclude that a small loss of temperature in a radiator must necessitate the use of large pipes and results in efficient heating surface for the system; while a large loss of temperature allows the use of smaller pipes and results in a less efficiency of the heating surface.

The less efficient the heating surface of a system is the greater must be the number of square feet of heating surface to supply a given amount of heat. And hence, if the conclusion above be correct, it means that when designing a hot water heating system we must provide larger pipes for a small loss of temperature of the water in the radiator than for a large loss, but we need not supply quite as much radiating surface for the small loss as for the large loss. But until further data are secured we are unable to say how much the efficiency of the heating surface is affected by an increase or decrease of the loss of temperature of the water while passing through the radiator.

The effect of the circulation of the water in the radiator of a hot water system is a subject which merits more attention than it has been or is now receiving, and it is to be hoped that investigations will be made which will throw more light upon the subject. Such an investigation would be in line with the progress which is being made in our knowledge of heating and ventilation, and the facts which would be obtained would undoubtedly be of value.

Builders Must Pay for Plumbing.

One of the evils the plumbing trade has had to contend with is the practice of one class of builders refusing payments for plumbing work when they become due, claiming contracts have not been fulfilled. In order to avoid law trouble and to secure their money plumbers have in many instances done a great deal of extra work not specified free of cost. In this way these builders have materially reduced the cost of their buildings by following the same methods with the plumbers and such other contractors as they could force. The plumbers have for some time been studying the question and in several instances have induced the builder to settle honestly outside of the courts by refusing to finish the work until the original contractor was paid. The following account is given in the *Telegraph* of a case where their methods have been brought before the court and sustained. An important decision was rendered by Justice Dickey in the Brooklyn Supreme Court in favor of the Master Plumbers' Association of the City of New York, and the Amalgamated Society of Plumbers and Gas Fitters of New York, in an action brought against them by Henry L. Brandt, for an injunction forbidding these unions ordering a strike on the premises 19 West 128th street, in this city.

Last December Brandt contracted with William O'Connell for plumbing work. O'Connell worked there from December until January, at which time, he asserts, he was entitled to receive payment. Brandt disputed O'Connell's right, insisting O'Connell had not performed his contract. He then engaged other plumbers to do the work. O'Connell reported his grievance to the Plumbers' Associations, who immediately notified all plumbers not to work on the premises, and also warned the supply houses not to furnish any material. Brandt engaged other plumbers, but as soon as they started work the union ordered them to quit, and sent delegates to notify the plumbers that a strike had been ordered. Brandt, find-

ing that he could not engage other plumbers, brought an action to restrain the unions from interfering with him.

The Plumbers' Associations, through their counsel, contended they had a right to notify plumbers and supply houses that a strike had been ordered, and to warn them against furnishing goods to Brandt, and, as they had used no force in preventing the men working, an injunction could not issue. Justice Dickey adopted this view, and rendered his decision refusing the injunction.

Association News.

Buffalo Master Plumbers.

The annual meeting of the Master Plumbers' Association of Buffalo, N. Y., was held on February 16, when the following officers were elected for the ensuing year:

President, Thomas J. Kavany.
Vice-President, Joseph Irr.
Secretary, Frank L. Beyer.
Treasurer, A. J. Batt.
Sergeant-at-Arms, E. S. Franke.
Trustees, H. J. Kneeper and A. J. Batt.

Minnesota State Plumbers.

The annual convention of the Minnesota Master Plumbers' Association was held in Minneapolis on February 14 and 15 and was opened by Vice-President F. H. Shuler. W. W. Sykes, president of the local association, made an address welcoming the delegates. After transacting the regular business the following officers were elected:

President, F. H. Shuler, Minneapolis.
Vice-President, S. A. Hill, St. Paul.
Second Vice-President, J. D. Cunningham, Winona.
Treasurer, J. H. Shea, St. Paul.
Secretary, George H. Hineline, Minneapolis.
Executive Committee: John Holt, St. Paul, and J. F. Willis, Minneapolis.
National Delegate, J. J. Donigan, St. Paul.
Alternate, A. A. Blethen, Minneapolis.

After selecting St. Paul as the place for holding the next convention, the delegates were banqueted at the Nicollet Hotel by the local association, with W. W. Sykes as toastmaster.

Ohio State Association.

The ninth annual convention of the Ohio State Association of Master Plumbers assembled in Youngstown, Ohio, on February 13, with 50 delegates and 35 visiting members. President Poplowsky of Cleveland called the convention to order at 10 o'clock, after which W. J. Scholl introduced Mayor Moore, who delivered the address of welcome. Committees were appointed by the president, as follows: Credentials, W. H. Botley, Cincinnati; John T. Reiley, Dayton; F. C. Feller, Cleveland. Resolutions, F. Desermoux, Springfield; C. A. Armour, Cleveland; Thomas Kinley, Toledo. Auditing, R. B. Moodie, Dayton; S. A. Esswein, Columbus; F. C. Clements, Dayton. The reports presented by the president, secretary, and treasurer showed a steady increase in the membership during the past year, and that the association was having a healthy growth. A resolution to raise dues to $14, to provide a State Board and to act on New Orleans resolution was referred to executive session. In the evening the officers, delegates and guests were given a banquet at the Tod House by the Mahoning Valley Association. W. J. Scholl acted as toastmaster and by his happy humor contributed materially to the pleasure of all.

Wednesday morning the Auditing Committee reported a balance of $384 in the treasury. A vote of thanks was given to the Engineers' Society of Columbus for efforts made to have a bill protecting plumbers adopted by the Ohio Legislature.

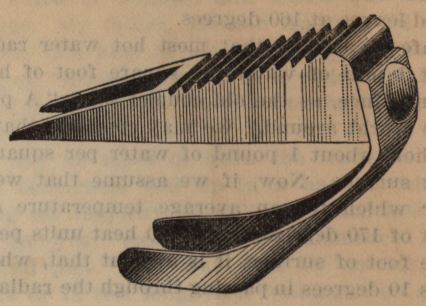
After accepting an invitation to hold the next convention in Columbus, the following officers were elected:

President, Samuel A. Esswein, Columbus.
Vice-President, R. B. Moodie, Dayton.
Secretary and Treasurer, A. S. W. Hoffman, Columbus.

After a vote of thanks to the Mahoning Valley Association the convention adjourned.

Pipe Grip for Screw Wrench.

Those who do jobbing work know what a burden a complete kit of tools make, and any device that will enable one tool to do the work of two can be frequently carried to advantage. An attachment which Gleason & Allen, Terryville, Conn., are making for use on screw wrenches is shown herewith, and shows how the wrench is then suitable for use on round pipe, rods or fittings. It is a patented device made of good material, with teeth



Pipe Grip for Screw Wrench.

to prevent slipping and with a spring to hold it on the wrench jaw. It is small and light, so that it can be easily carried, and is specially adapted for light jobbing work.

New Style of Tongs.

The Athol Pump Company, Athol Mass., are manufacturing patent tongs, which are illustrated herewith, for use by plumbers, tinsmiths, &c. These tongs, it is

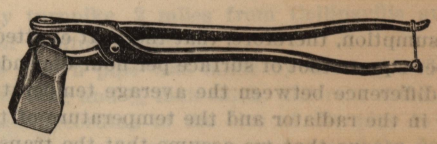


Fig. 1.—Tongs Holding Soldering Copper.

stated, will hold a soldering copper, see Fig. 1, or a ladle for pouring lead at any angle desired, as in Fig. 2, and will permit work where the usual soldering copper or ladle would be inconvenient. These tongs, with a

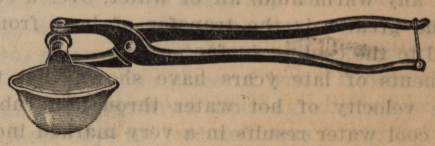


Fig. 2.—Tongs Holding Ladle.

ladle, can be used for dipping out traps and other plumbing work.

CAPTAIN D. M. GILMORE died at his residence, 1600 Laurel avenue, Minneapolis, Minn., on February 14. He was born in Newville, Pa., in 1840, and came to Minneapolis first in 1857, but on account of the financial crash and hard times he returned to Pennsylvania in the fall of the same year. In 1861 he joined the Third Pennsylvania Cavalry as corporal and served during the war. At the close of the war he had a captain's commission. He was in many of the great battles of the war, and was wounded in January, 1864. After leaving the army he engaged in business in Pennsylvania for two and one-half years, and in 1866 returned to Minneapolis. He founded the D. M. Gilmore Furniture Company, in which he was interested until 1891. At that time he engaged in the

steam fitters' supply business, in which he continued until his death. He was a member of the firm of Gilmore & McGortle, and was also president of the Minneapolis Iron Works & Boiler Factory.

The Linich & Karlson Pipe Joint and Connection.

The accompanying drawings represent a novel pipe joint and connection, which by virtue of its simplicity of construction and easy application appeals to users in cases where a pipe joint is required to withstand heavy pressures, and which can easily be tightened or taken apart without cutting the piping or disturbing the adjacent connections. In applying this joint, a groove is cut in the ends of the pipes to be coupled, a pair of split rings are put into the grooves, packing rings are placed next to the inner faces of the split rings, and flanges with bolts tighten the joint in place. No litharge or solder is required; no pipe tongs or wrenches are used, and the arduous labor of pipe fitting is dispensed with.

Referring to the drawings, Fig 1 shows the sealing of the end of a pipe or cylinders, as would be used for any type of pressure tank. Fig. 6 represents an elbow; a tee would, of course, have another branch. Fig. 7 is a straightway coupling. Figs 8 and 9 respectively show a method of tapping a pipe main without disturbing it. Figs. 2 to 5 show details. This pipe joint is being introduced by De Bonneville & Johnston, 11 Broadway, New York.

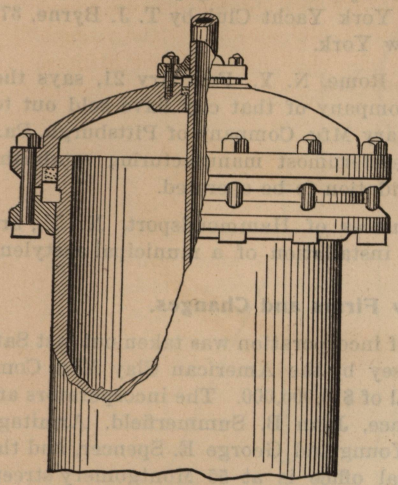


Fig. 1.—Sectional Elevation, Showing Sealing of a Pipe at the End.

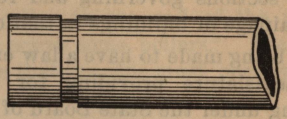


Fig. 2.—Pipe Formed with Groove to Receive Split Packing Ring.

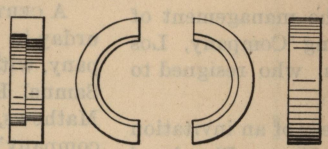


Fig. 3. Fig. 4. Fig. 5. Split Packing Ring.

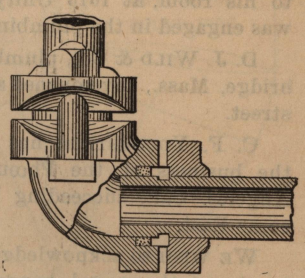


Fig. 6.—Elbow Joint.

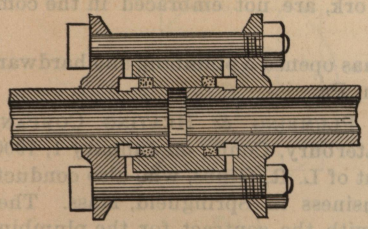


Fig. 7.—Pipes Coupled End to End.

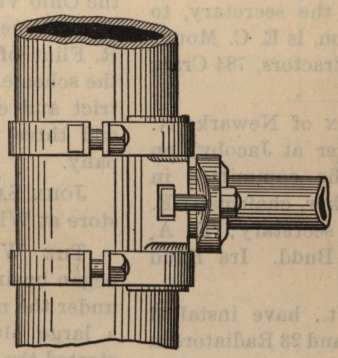


Fig. 8.—Tapping One Pipe Into Another Without Disturbing the Latter.

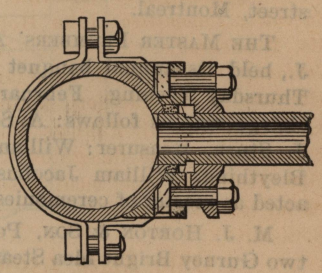


Fig. 9.—Section of Fig. 8.

THE LINICH & KARLSON PIPE JOINT AND CONNECTION.

John E. Toumey, the junior member of the well known firm of master plumbers, John Toumey & Son, 419 Lexington avenue, New York, died suddenly last Thursday, February 22. The funeral services will be held on Sunday at his late residence, 152 East Forty-fifth street, New York.

The Standard Mfg. Company's

New York office is situated in the Fulton Bank Building, 81 Fulton street.

James F. Conron, who formerly represented the Standard Mfg. Company as manager in this territory, has been placed in charge. He will have entire control of the sales in this market of the products of the various plants included in the new company.

Mr. Couron says it will be the policy of the new concern to sell to the jobbing trade only. All requests for prices will be referred to the jobber nearest to the locality from which the inquiry may come.

Information, other than prices, regarding the goods manufactured by any of the branches of the company will be promptly and cheerfully given.

Heating and Plumbing Notes.

The Sessions Foundry Company, Bristol, Conn., have secured a renewal with the city of Boston of their contract for supplying with iron Castings the water and sewer departments of that city.

Abel P. Randall has moved his plumbing and gas fitting business to the south store in the Narragansett Block, on Main street, Westerly, R. I., which he has fitted up in a convenient form.

Ridgway & Tyler, heating, ventilating and sanitary engineers and contractors, 95 and 97 State street, New York, are issuing a 36-page catalogue devoted to heating schools and public buildings with hot air from furnace on either the fan or gravity system. Full page engravings show Fans, Furnaces, systems with both Fan and Furnace, and without Fans, the Furnaces being of special construction for either kind of work. The text explains

the advantage of the Fan for securing a positive distribution of air. Several pages are devoted to Flush Closets and Urinals.

The Metal Worker acknowledges the receipt of complimentary tickets for the grand annual ball of the United Brotherhood of Plumbers and Gas Fitters of New York, to be held at American Theatre Hall, on Eighth avenue, above Forty-first street, on March 17, under the management of the following committee: Joseph L. O'Keefe, chairman; F. C. Barrett, secretary; D. W. Lenahan, treasurer; Henry F. McKevit, Hugh McGowan and Thomas A. Stadmeyer.

THE BOARD OF HEALTH of Englewood, N. J., have issued in a little pamphlet a plumbers' code, which is an ordinance of 49 sections governing and regulating the plumbing and drainage of buildings in that city.

AN EFFORT is being made to have a law enacted by the Massachusetts Legislature providing for State supervision of plumbing under the State Board of Health.

WILLIAM FERGUSON, SR., aged 69 years, was found dead on February 18, at the foot of the stairway leading to his room, at 1613 Unity street, Frankford, Pa. He was engaged in the plumbing business for many years.

D. J. WILD & Co., plumbers, of Harvard square, Cambridge, Mass., have opened a branch store at 7 Mt. Auburn street.

C. F. YOUNGSTROM has assumed the management of the business of the Phœnix Plumbing Company, Los Angeles, Cal., succeeding W. L. Coon, who resigned to come East.

WE WISH to acknowledge the courtesy of an invitation to the sixth annual banquet of the Master Plumbers' Association of Montreal, which was held at the Place Biger Hotel on Wednesday last. The president of the association is Joseph A. Giroux, and the secretary, to whom we are indebted for the invitation, is E. C. Mount of the firm of E. C. Mount & Co., contractors, 784 Craig street, Montreal.

THE MASTER PLUMBERS' ASSOCIATION of Newark, N. J., held its annual banquet and smoker at Jacoby's on Thursday evening, February 15. The committee in charge was as follows: A. Selden Walker, chairman; F. J. Sturn, treasurer; William Jacobi, secretary; E. A. Bleything, William Jacobus and Ira Budd. Ira Budd acted as master of ceremonies.

M. J. HORTON & SON, Poultney, Vt., have installed two Gurney Bright Idea Steam Boilers and 23 Radiators in the Town Hall, and after a thorough test in cold weather they have demonstrated that a temperature of above 70 degrees can be maintained throughout the building with a steam pressure of 1 pound.

THE BALDWIN ENGINEERING COMPANY are now established in fine quarters at 107 West Seventeenth street, New York, with excellent facilities for designing or installing steam or hot water heating systems.

W. H. PETERSEN, the Philadelphia representative of the Pierce, Butler & Pierce Mfg. Company, Syracuse, N. Y., has his headquarters in the Builders' Exchange, where samples of their varied line of Steam and Hot Water Boilers are displayed. Mr. Petersen was a visitor in New York this week and reports the usual midwinter dullness in his vicinity.

THE STICKNEY HEATING COMPANY, 80 Greenwich street, New York, have done a fine piece of heating in the building of the Prospect Park branch of the Brooklyn Y. M. C. A., heating the building; also hot water for the bath, shower and toilet rooms and a large plunge bath. The association is highly pleased with the service.

M. ABBOTT'S SONS, 137 Eighth avenue, New York, have recently completed a fine heating and ventilating system in the West Hoboken, N. J., school, using two No. 10 D Series Carton Steam Boilers and direct-indirect radiation. They have also installed in the residence of Jules Breauchaud, Park Hill, N. Y., a Magee Twin Combination Hot Water and Hot Air Furnace with a ventilating system.

THE ELLIS MARINE PLUMBING COMPANY, 32 Broadway, New York, are issuing a circular calling attention to their system of plumbing yachts and other vessels, and which is also adapted for removing sewage from fixtures in buildings below the sewer level. The company have many vessels under examination with a view to supplying them with all of the plumbing conveniences of a residence ashore. They have also recently installed a system in the Hotel Manhattan which automatically disposes of the sewage from the laundry and all the basement fixtures which are below the sewer level. The waste empties into a 1200-gallon tank, which requires no attention, being automatically discharged on the opening of the ejector valve by a float, when it is completely emptied in five minutes. The same system is being put into the new house of the New York Yacht Club by T. J. Byrne, 377 Fourth avenue, New York.

A REPORT from Rome, N. Y., February 21, says the Wilson Bathtub Company of that city have sold out to the Standard Sanitary Mfg. Company of Pittsburgh, Pa., and will be the easternmost manufacturing establishment of the consolidation to be operated.

THE village trustees of Hammondsport, N. Y., are contemplating the installation of a municipal acetylene gas plant.

New Firms and Changes.

A CERTIFICATE of incorporation was taken out last Saturday in New Jersey by the American Clay Mfg. Company, with a capital of $10,000,000. The incorporators are Samuel B. Lawrence, John B. Summerfield, Armitage Mathews, Jas. C. Young and George E. Spencer, and the company's principal office is at 55 Montgomery street, Jersey City, N. J. The above concern represent, it is stated, a consolidation of 28 sewer pipe manufacturers in the Ohio Valley and Akron districts of Ohio, representing about 60 per cent. of the capacity of the country. Charles R. Flint of New York is managing the financial end of the scheme. Several important plants in the Akron district and elsewhere in Ohio, with four in Pennsylvania and three in New York, are not embraced in the company.

JOHN SAUSSAMAN has opened a plumbing and hardware store at Williamstown, Pa.

THE WATERBURY PLUMBING & HEATING COMPANY began business in Waterbury, Conn., on January 1, 1900, under the management of L. R. Gibbs, who also conducts a large plumbing business in Springfield, Mass. They started the new year with the contract for the plumbing and nickel work in the new Cables Block. They intend to do general contracting work and plumbing and heating. Their showroom is complete in every detail of interior arrangement, and is stocked with a fine line of Plumbing and Heating Goods.

O'BRIEN & KELLEHER plumbers, Lansingburg, N. Y., have dissolved partnership, and F. J. O'Brien will continue the business.

THE DOUGHERTY-O'HERRON COMPANY, Princeton, Ind., have been incorporated to manufacture Acetylene and Gas Generators, with a capital of $10,000, by J. G. Lagrange, J. A. West, T. P. O'Herron, all of Princeton.

THE LEX RADIATOR COMPANY, Smyrna, Del., have been incorporated for the purpose of manufacturing Heating Apparatus, with a capital of $10,000, by T. G. Newburg, R. Boone, both of Philadelphia, Pa.; J. L. Beckett of Smyrna; J. O. Bowman, attorney.

THE partnership existing between J. W. Johnston and J. W. Albee, under the firm name of Johnston & Albee, Rockland, N. Y., was dissolved January 24 by mutual consent. The Optical, Jewelry and Musical Instrument business at Roscoe, N. Y., will be continued by J. W. Albee, and the Plumbing, Hardware, Implement and Gas Machine business at Rockland, N. Y., by J. W. Johnston and H. C. Albee, under the firm name of Johnston & Albee. H. C. Albee is a brother of J. W. Albee. The new firm will continue the jobbing business as heretofore done by the old concern.

ANGLES OF CONNECTING ELBOWS.

A correspondent writing from Hazleton, Pa., desires to know how he may obtain the angles for the elbows to connect a box, which he has constructed at the top of a fan, with a certain round pipe. To explain the relative positions of the box and the pipe he accompanies his inquiry with several diagrams, two of which are reproduced in Figs. 1 and 2 of the accompanying illustrations, but unfortunately there are several incongruities in his drawings and description due to his failure to comply with the rules of mechanical drawing. We take this opportunity to strongly urge upon the pattern cutter the necessity of familiarizing himself with the principles of mechanical

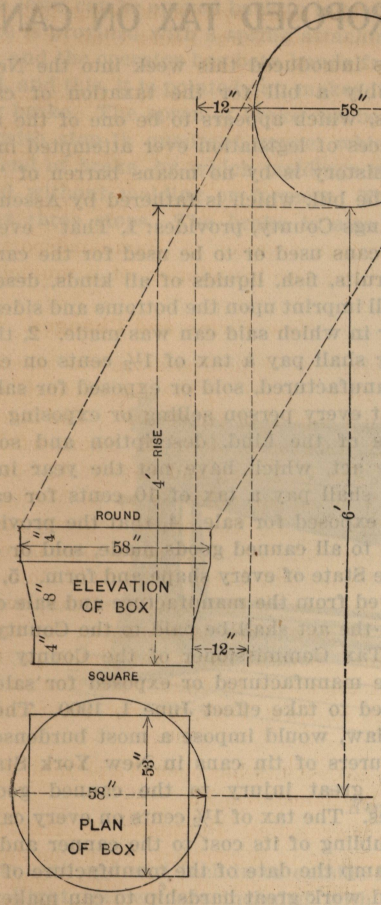


Fig. 1.

a fan to a round flange 58 inches in diameter to fit the elbows necessary to connect it with the pipe, which appears in section in Fig. 1 and in elevation in Fig. 2. The plans and elevations of the box, though not drawn to scale, are placed in correct relation to each other and thus far tell their story. The sectional view of the pipe in the upper part of Fig. 1 is connected by dimension lines to both the plan and to the elevation of the box, so that we are in doubt as to which of the views it belongs, or, in other words, as to whether its position is vertical or horizontal. If it belongs to the plan we conclude that the pipe occupies a vertical position, with its lower end somewhat above and to one side of the flange on the box. This idea is further sustained by the other sketch, Fig 2, in which the connecting elbows are shown. In his letter our correspondent states, however, that "the job has a rise of 4 feet" and that "it is 6 feet from the center of the collar to the end of the pipe, which runs horizontally across some boilers." We are left, therefore, to conclude that the pipe must occupy a horizontal position

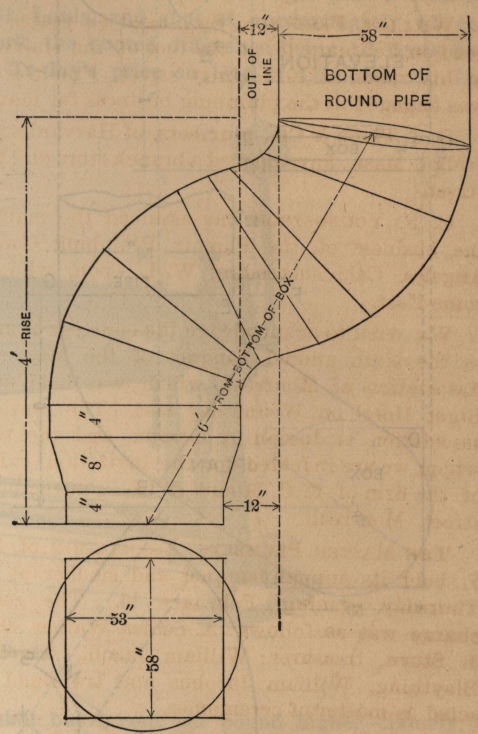


Fig. 2.

Angles of Connecting Elbows.—Reproduction of Our Correspondent's Sketches.

or linear drawing. A common error among mechanics in this line is the attempt to learn pattern cutting without giving sufficient attention to a complete system of linear drawing, of which pattern cutting, or development of surfaces, is only a part.

Without wishing to criticise our correspondent we may be allowed, for the benefit of our readers, before attempting a solution of his problem, to refer to some of the points in which his diagrams fail of their purpose and consequently do not clearly tell their story. In the first place, the several views which it is intended to give of any subject should be kept separate from each other. Any geometrical drawing gives primarily dimensions in two directions; an elevation shows hight, with the width or the length according as it is taken from the end or the side of an object, while a plan shows both width and length, but not hight.

A round pipe occupying a vertical position can appear in plan only as a circle, while in elevation it would be shown by two parallel lines of definite length and its profile could not be seen. The lower part of our correspondent's drawings shows the plan and elevation of a box 8 inches high, which he has constructed to form a transition from a collar 53 inches square rising from the top of

and that the sectional view of the same in Fig. 1 belongs with the elevation of the box instead of with the plan, and that the upper portion of Fig. 2 must be entirely disregarded.

Upon this basis we therefore proceed to construct the plan and elevation to scale, as shown in Fig. 3, in which the elevation shows the bottom of the horizontal pipe to be 4 feet above the top of the fan, while the plan shows the end of this pipe to be 6 feet away from the center of the box measured in one direction, while there is also a difference in position of 12 inches measured in another direction. As one cannot solve a problem until the exact conditions are known, and as accuracy is the vital principle of pattern cutting, the first essential is to make accurate drawings, to scale or full size, of the given conditions, after which the remaining work may not prove to be so difficult as was at first supposed.

Having now arrived at a presumably correct statement of the conditions it appears that the simplest solution of the problem is that of first placing a right angle or 90 degree elbow of any convenient sweep and number of pieces upon the round collar of the box, which may be turned as far as desirable to approach the end of the horizontal pipe, as shown by A B C D of the plan in Fig.

3, afterward adding an elbow of such an angle as is necessary to connect the two open ends and as shown by A B G E of the same plan. As the collar rising vertically from the box is to be connected with a horizontal pipe, it is evident that the vertical elbow of the combination must be one of 90 degrees. The angle of the other or horizontal elbow may be obtained in the following manner: Assume any distance consistent with the space allowed for the turns, as 18 inches, for the radius of the elbows at the throat, and set off this distance on the line E G, extended, of the plan, Fig. 3, and from the point F thus obtained describe an arc, E A, extending it indefinitely in the direction of A, and from the same center with the radius F G describe the arc G B in the same

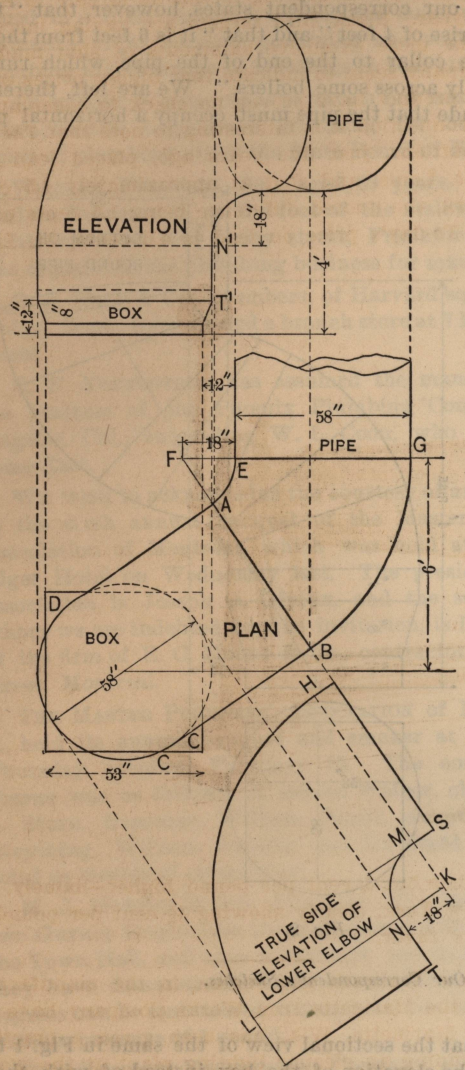


Fig. 3.—Plan and Elevation of Pipe and Collars, Showing Angles of Elbows to Connect Them.

manner. Now bring the straight edge tangent to the plan of the flange near D and to the arc E A near A, and draw D A. In like manner bring the straight edge tangent at C and B and draw C B. From F and at right angles to D A or C B draw F B; then will be G F B be the required angle for the horizontal elbow.

A correct side elevation of the right angle elbow may be obtained by projecting lines from the points of the plan at right angles to C B, as shown below. Draw the vertical line H K 18 inches from the side of the collar toward which the elbow is to curve, and make H K equal to F G. From K as center and with radii equal to F G and F E describe the quadrants H L and M N, thus completing the elevation. M S shows the amount of straight pipe between the two elbows, while N T shows the amount of vertical pipe between the box and the first elbow, and is equal to the remaining distance after the sum of 12 and 18 inches in deducted from 4 feet, or N¹ T¹ of the elevation. Both of these portions of straight pipe would have been less or greater had the radius assumed for the curve of the elbows at the throat (18 inches) been more or less. The distance N T also shows that more space might have been utilized for the transition from the square flange to the round one instead of confining it to the 8 inches shown.

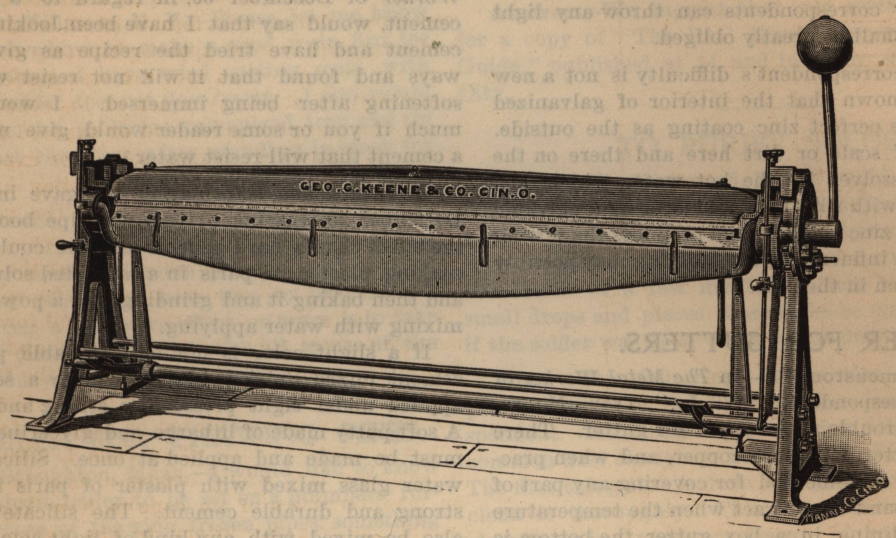
Our correspondent, evidently laboring under the impression that both elbows would be alike, requests that they be made in five pieces each. It is plain to be seen, however, that if the right angle elbow were made in five pieces the other one might be made in three pieces in order to have them approximately of the same size as those of the larger elbow.

A PROPOSED TAX ON CANS.

There was introduced this week into the New York State Assembly a bill for the taxation of cans and canned goods, which appears to be one of the most astonishing pieces of legislation ever attempted in a body whose past history is by no means barren of "freak" measures. The bill, which is fathered by Assemblyman Farrell of Kings County, provides: 1, That "every manufacturer of cans used or to be used for the canning of vegetables, fruits, fish, liquids of all kinds, descriptions and sorts shall imprint upon the bottoms and sides of said cans the year in which said can was made. 2, that each manufacturer shall pay a tax of 1½ cents on each and every can manufactured, sold or exposed for sale in the State. 3, that every person selling or exposing for sale canned goods of the kind, description and sort mentioned in the act, which have not the year imprinted on each can, shall pay a tax of 10 cents for each and every can so exposed for sale. 4, that the provisions of the act apply to all canned goods made, sold or exposed for sale in the State of every shape and form. 5, that all moneys derived from the manufacture and sale of goods mentioned in the act shall be paid to the County Treasurer or the Tax Commissioner of the County wherein the goods are manufactured or exposed for sale." The act is designed to take effect June 1, 1900. The act, if it became a law, would impose a most burdensome tax on manufacturers of tin cans in New York State, and would cause great injury to the canned goods and grocery trades. The tax of 1½ cents on every can would mean the doubling of its cost to the canner and the obligation to stamp the date of the manufacture of the can upon it would work great hardship to can makers, who, in dull times, are accustomed to make up large stocks of cans. Naturally held-over cans of a former year would not be purchased by canners for packing goods of a later season, and the stocks thus made up would be a total loss to the can maker. In the opinion of those in the grocery and canned goods trades, the passage of such a law as the Farrell bill would mean that thousands of employees would be thrown out of work and factories and stores would be closed all over the State. Moreover, it is held that such a law would be unconstitutional and a direct violation of the Interstate Commerce law. It would be a restriction not only upon trade in New York but upon trade between New York and other States. It is hardly possible that such a piece of class legislation should pass the Legislature, and yet a similar bill passed both the Senate and Assembly several years ago. It was vetoed, however, by Governor Hill, and, no doubt, a similar fate would be met by the Farrell bill if it reached the hands of the present Executive. Nevertheless the fact that a bill of this character is now pending has stirred up considerable uneasiness and more opposition among the can making and can using interests of the State. In this connection there seems to be, in the fifth clause of the bill, sufficient material to kill it at once. For, if words mean anything, the clause in question provides for the confiscation to the State of all money derived from the manufacture and sale of goods mentioned in the act!

Keene's All Steel Jaw Cornice Brake.

We show in the accompanying illustration a new light weight cornice brake made by George C. Keene & Co., Cincinnati, Ohio. The brake is adapted for the ordinary work of cornice makers, and will form No. 26 gauge metal straight over a ¼-inch apron, which is a tool steel plate and is very hard. This plate is screwed to the apron, and can be taken off and a wider plate put on for heavy bending. The clamping of the metal is accomplished by treadles attached to a steel shaft which is set in adjustable boxes which can be set up in case of wear. The jaws of the brake open 1 inch and are recessed so moldings can be made without reversing the sheet; the jaws can be opened back to take out the work. The brake is provided with a spring attachment to open the jaws, and the operator has both hands free to handle the metal, and this, it is pointed out, makes it a very fast operating brake. The apron of brake can be held in any position with stop in quadrant gauge, which is shown on right end of brake, by which moldings or beads can be formed without molding or formers. The quadrant gauge has three stops. The brake is also made with



Keene's All Steel Jaw Cornice Brake.

openings on each end so 1 inch in or outside flanges can be made. Eight formers are included with the brake, ¾ to 3½ inches.

FLASHINGS.

The W. Dewees Wood Company, McKeesport, Pa., will shortly erect an addition to their plant on a recently purchased tract of land on the Monongahela River, near Charleroi.

E. B. Badger & Sons Company of Boston, Mass., were incorporated last week, with a capital of $60,000, for the manufacture and sale of Metals, &c., E. B. Badger, D. B. Badger and A. C. Badger being the incorporators.

In *The Metal Worker* of February 10, page 37, we mentioned that William F. Weill, Lindenhurst, Suffolk County, N. Y., was about starting a tin shop, and wanted to get catalogues and price-lists from manufacturers and dealers in tinners' tools and supplies. The name, however, was misprinted and should have been William F. Wild.

John Schwing, Bridgeport, Conn., is completing his contract for the metal work on the new Danbury Court House, and is now getting out the metal work for the new Police Building.

Wm. Emley, New Britain, Conn., has the contract for tinning the new Government buildings on Gull Island.

Roberts & Arnold, Bristol, Conn., had the contract for the roofing, and J. M. White & Co. the plumbing and heating of the new armory, which has been nearly completed on North Main street.

The Springfield Cornice Works, Springfield, Mass., are distributing effective advertising cards in the shape of blotters backed with a curious night scene, showing comets, moons, cats and skylights.

The Sheet combine is being rapidly put in shape, and it is expected the American Steel Sheet Company will take over the mills not later than May 1, and possibly by April 1. All told, 155 mills are to be included.

Markle Lead Works, St. Louis, Mo., report sales of babbitt and special bearing metals as largely in excess of last year. Black Bird targets are having increased sale. The more extensive shipments of shot made by this company seem to indicate that higher prices of the finished product have proven no check to consumption. In this connection it is interesting to note that *The Iron Age* quotations, just five years ago, placed lead at 3 cents, St. Louis, and shot at approximately 4.5 cents, New York, the quoted difference being 1.5 cents pound value. To-day's price on lead is 4.6 cents, St. Louis, and on shot but 1 cent per pound higher—namely, 5.6 cents, New York, clearly showing ½ cent per pound in consumers' favor.

The new Wallrath gas engine, in the manufacture of which the Marinette Iron Works Company have engaged at Marinette, Wis., has been given a practical test in running an electric lighting plant at the works with satisfactory results. A power test was also made, and it is stated that the engine developed 25 per cent. more power than had been claimed for it.

Alfred M. While of Foster's Building, High street, Sheffield, England, better known under the firm name of the Eclectic Steel Company, desires to take up agencies or specialties connected with engineering and iron and steel manufactures, and invites correspondence from parties wishing representation in such lines.

Freezing weather, reaching as far south as Tampa, Fla., has caused serious damage to the fruit trees and early vegetables. The orange, peach and pineapple crops will be shortened, as well as strawberries, and tender vegetables are all destroyed, according to reports from the South.

At Pittsburgh, the United States Circuit Court has been asked to dismiss the cases of the Carnegie Steel Company, Limited, against the Cambria Steel Company and Heyl & Patterson. The plaintiffs admitted that no notice of the alleged infringement had been given to the defendants, and it is the intention to bring new suits. The suits involve a patent method of casting and conveying metals.

THE LETTER BOX.

PITTED GALVANIZED PIPE.

From J. W. H., Montreal, Canada.—What is the cause of and remedy for the pitting of galvanized iron pipe used for hot water circulation? The pipe has been in use about three years and is sound and solid and well galvanized, but develops little nodules of rust and spots and under these lumps of rust a pit develops that gradually eats through the pipe. The balance of the pipe in large spaces appears to be as sound as the day it was fitted. A large amount of electricity is in use in the building where the pipe is used. Would it be possible that galvanic action could be set up? The cold water pipe of the same kind so far has not been affected. If you or any of your correspondents can throw any light on this question I shall be greatly obliged.

Answer.—Our correspondent's difficulty is not a new one. It is well known that the interior of galvanized pipe cannot have as perfect zinc coating as the outside. The little spots of scale or dirt here and there on the inside are soon dissolved by the hot water, which then comes in contact with the iron and sets up a galvanic action between the zinc and iron and produces the pitting observed. Electric influence in the building may possibly favor the local action in the pipe.

COPPER FOR GUTTERS.

From E. C., Edmonston, Ill.—In *The Metal Worker* of January 13 a correspondent, "W. L.," Troy, N. Y., wrote concerning trouble with copper for gutter. There is nothing the matter with soft copper, and when practically laid it is the best method for covering any part of a roof. Metals expand or contract when the temperature changes. Of the lining in a box gutter the bottom is most exposed to the sun, and in such it expands and rises from the wood work, and in thus moving it pulls the lower part of the sides in toward the center, and in contracting it cannot force the sides back into place; hence the bottom is buckled up before it has settled down into the wood work. The next expansion breaks the wrinkles and the gutter is destroyed. Therefore the lining of box gutters should be laid in two parts, with a seam in the center and bottom. The first part laid should be well nailed to the wood work before the second part is connected. The sides of the gutter should have free play, but the edges should be well nailed to the wood.

TAPERING FIVE-PIECE ELBOW.

From F. W. S.—Please inform me as soon as possible how to construct a pattern for a five-piece tapering elbow, oval on the large end.

Note.—As our correspondent is in a hurry for this problem we would suggest that he refer to the "New Metal Worker Pattern Book," where Problem 42 gives a solution of an ordinary five-piece elbow in round pipe, and Problem 212 shows how to make a three-piece elbow in a round to elliptical pipe. A combination of the two problems will probably answer his needs.

SPIRAL ONE-PIECE ELBOW.

From Experience, Baltimore.—Referring to a Letter Box article in *The Metal Worker* of February 10, will "J. C.," Indiana, explain what advantage it would be to know how to make a spiral elbow, and of what use, if possible to make, it would be after being made, except to help choke the pipe, obstruct the flow and cause it to freeze in cold weather, thereby causing damage? No pipe or drain should be put on any building that does not allow of a quick, free flow of water and will not collect dirt and water, to freeze and hold after it does, to the detriment of the pipe and building. Experience will surely demonstrate that the straightest and smoothest surface to a pipe, with as few bends as possible, which will allow of a free flow, is the best every time and cannot be improved upon. Looks are very good, but results are better.

WATER PROOF MARBLE CEMENT.

From W. W., Wyoming.—In your answer to the inquiry of "T. & S.," Wheeling, W. Va., in *The Metal Worker* of December 30, in regard to a hard marble cement, would say that I have been looking for such a cement and have tried the recipe as given in various ways and found that it will not resist water, it soon softening after being immersed. I would like very much if you or some reader would give me a recipe for a cement that will resist water.

Answer.—The information we gave in the issue of December 30 was taken from a recipe book, and was to the effect that a hard marble cement could be made by soaking plaster of paris in a saturated solution of alum and then baking it and grinding into a powder, and after mixing with water applying.

If a slight color is not objectionable, pure Portland cement mixed quickly with water to a soft putty and applied under slght pressure is strong and water proof. A soft putty made of litharge and glycerine sets hard; it must be made and applied at once. Silicate of soda or water glass mixed with plaster of paris is also a very strong and durable cement. The silicate of soda may also be mixed with any kind of light colored hydraulic cement and tempered for a lighter color with a portion of zinc white or any dry oxide color to suit the requirement for a water proof cement.

ADVICE WANTED ABOUT VENTILATION.

From J. E. B., Philadelphia.—I propose to erect a 30-inch diameter galvanized iron pipe about 125 feet long inside of a building, extending from the ceiling of the engine room to above the roof, for the purpose of removing warm air from the engine room. Would it be necessary to put a fan in this pipe? If so, where would you advise it to be located?

Answer.—If the air in the engine room is quite warm there should be a fairly good natural draft. If not found satisfactory a fan will be in order, and should be placed at the bottom of the pipe and so arranged as to be driven from the engine or shafting.

KEROSENE OIL PUMP GIVES TROUBLE.

From F. I. P., New York.—Please give me through *The Metal Worker* some advice to help me in the following difficulty: Four weeks ago I set a pitcher spout pump, No. 2, with 3-inch cylinder, 8 feet, with 1½-inch suction lead pipe, pumping kerosene, the pipe being perpendicular. The pump holds oil all the time. The trouble is that the oil goes out of the pipe when standing 10 or 15 minutes, so that a few strokes must be taken each time to get oil. The suction pipe is perfectly air tight. Does the gas or vapor cause this, and shall I be obliged to use a foot valve to overcome the difficulty?

Answer.—As we understand from our correspondent's letter he has 8 feet vertical lift. The partial vacuum under the pump valve generates vapor, which allows the

oil to recede for a short distance. It will be necessary, therefore, to use a foot valve.

STOVE PIPE IN SERVICE HALF A CENTURY.

From J. R. Haselden, Lancaster, Ky.—Some of the readers of *The Metal Worker* will be interested in some stoves and pipe which have been constantly in use in a Baptist church here since 1851, when they were put up by T. W. Reed, who is a good tinsmith to-day, though a very old man. The church is up to date in being lighted by electricity and having handsome stained glass windows, but is heated by two nine-plate wood stoves made by Wallace Lithgow & Co., Louisville, Ky. The stove pipe is solid, showing very little rust, and looks as if it was good for another 49 years. It was made of No. 24 or 26 iron. The stoves stand about 25 feet from the chimney and the pipes run about 8 feet above the floor, supported by wires. Now I would like to know the difference between that stove pipe iron and the best stove pipe iron that we can get to-day, which will not show any such length of service.

WANTS SOLDERING FLUX.

From J. W. C., Fillmore, N. Y.—Please let me know in *The Metal Worker* how to make a good rosin flux for soldering tin roofing. I have tried cutting rosin with gasoline, but the solder does not flow freely. I also would like to have a flux for soldering galvanized iron and tin that will not rust the ware after standing in stock for some time.

Note.—Turpentine, being heavier than gasoline, has been used for the purpose mentioned in dissolving rosin, with satisfactory results to some tinners. Others have used still heavier oils. The best way to prevent the solding flux having a corrosive effect on ware is to take a cloth wet with clean water and wipe all traces of the soldering flux off as soon as the soldering is done.

STEAM BOILER FOR THAWING PIPES.

From S. P., Stoughton, Mass.—I would like to know how to make a steam boiler to be set on a plumbers' furnace for the purpose of thawing frozen pipes, something I can make myself in a tin shop.

Answer.—In *The Metal Worker* of February 13, 1897, a complete description of such a boiler was given. It is made 10 inches in diameter and 14 inches high, has three 2 inch tubes running through it from top to bottom to allow the heat of the furnace to pass up through it to help make steam. It is provided with a safety valve at one side and a steam gauge to show the pressure that is being developed, and also a hose connection, so that a hose may be attached to it to be carried to the pipe to be thawed. The description also shows the method of using it for thawing out frozen service or waste pipes or thawing frozen leaders.

COVER FOR UNDERGROUND STEAM MAIN.

From F. C. P., Maine.—Can *The Metal Worker* or some of its readers tell me the best way to cover steam pipes to be placed underground?

Note.—Many of our readers have done such work and are invited to express their opinions as to what has been most satisfactory in their practice. In the meantime we would suggest that it is important that the pipes and their covering shall be kept perfectly dry. In some cases the pipes are first covered with asbestos paper, then with thick hair felt and then wrapped with rosin sized or oiled water proof paper. The insulated pipe is then laid in a wooden or earthen ware trough and covered so that no water can get into it. If tiles made in two parts are used they are laid in cement. If wood is used the cover is laid in white lead and fastened with screws. Sometimes round drain tile is slipped over the pipes. Whatever the outer covering may be it is essential to have it large enough to provide an ample air space and the insulated pipe should be supported so that there will be the same amount of space all around the pipe.

HOW SHOULD BLOCK TIN BE SOLDERED.

From McC. & Co., Detroit, Mich.—Will some one kindly inform me how to solder sheet block tin so as to make a nice even seam?

Note.—This is a little out of the line of ordinary tinsmithing, but we hope some of our readers can give the assistance asked. It is probable that a solder made of 2 parts lead, 2 parts tin and 1 part bismuth could be used satisfactorily, as it melts at a low temperature, and sweet oil or paraffine would be a suitable flux. Then, with the copper hot enough to flow the solder readily and the work done quickly, the finished seam will be satisfactory in appearance.

A CONTRACTOR'S PAPER.

From Subscriber, New York.—Is there any publication in New York similar to "The American Contractor?"

Answer.—We suggest that our correspondent write for a copy of "The Real Estate Record and Builders' Guide," published at 14 and 16 Vesey street, New York City.

TO PURIFY SOLDER.

From R. E., Richmond, Vt.—I would like some one to tell me how to make solder that is melted over the second time as pure and good as it was originally. I mean the little pieces that accumulate around a country tinshop in the course of a few months. There is always a lot of small drops and pieces that might be melted over for use if the solder was good when it was done.

Note.—The following information, gathered from previous issues of *The Metal Worker*, may help our correspondent. All tinsmiths know that solder that has just common dust enough on it to be dirty does not work well. The first thing that is done to a place to be soldered is to clean it thoroughly. This establishes the point that cleanliness is a necessary feature of good solder. Drops of solder which accumulate on the bench and small pieces that have been lying around the shop a few months do not glisten and shine. In addition to common dirt they are liable to have brass filings, zinc chips and other troublesome foreign matter adhering to them. Consequently the solder not only needs melting but cleaning, which means heating to a red temperature, when sulphur is stirred in to bring the impurities to the top, where they can be skimmed off. In passing through this high temperature a great deal of the tin is lost and more must be added as the pot cools down. If the solder is to be of an even quality it must be freely stirred to keep the lead and tin well mixed. If this is done with sufficient care a solder will be produced that will be suitable for any work.

The annual report of Statistician Hyde of the Department of Agriculture, regarding the number of farm animals in the country, just completed, shows that on January 1, 1900, there were on farms of the United States 13,537,524 horses, 2,086,027 mules, 16,292,360 milch cows, 27,610,054 other cattle, and 41,883,065 sheep. This is a decrease of 127,783 in the number of horses, 48,186 in that of mules, and 384,171 in cattle other than milch cows. On the other hand there is an increase for the year of 302,245 in milch cows, and of 2,768,612 in sheep. There has been an average increase in value during the year of $7.21 per head in the case of horses, $8.60 for mules, $1.94 for milch cows, $2.18 for other cattle, and 18 cents per head for sheep, representing a total increase in value during the year of $216,000,000 in farm animals, exclusive of swine.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin has scored a further rise in price of 1c. to 1½c. for spot.

Copper is dull, with prices unchanged and steady.

Pig Lead shows no change on a moderate demand and firm prices.

Spelter is dull and weaker.

Tin Plates show strength and steadiness, with a good buying movement.

Black Sheets have stiffened further. Demand is active.

Galvanized Sheets rule firm and higher.

Pig Iron is exceedingly quiet. The market is a waiting one and lower prices have been named for Foundry Irons in some instances.

Steel Billets have stiffened slightly.

Old Metals are quiet and weak, with supply in excess of the demand.

Hardware is moving in very fair volume for the season, and indications of an early quickening in demand. Prices hold up firmly.

Solder has moved up another 1c. per lb., following Tin.

Block Tin Pipe has been advanced again for the same cause.

Wire Nails in small lots have been fixed by jobbers at $3.60.

Cut Nails in small lots are quoted at $2.80 by agreement between jobbers.

Smooth Wire is likely to advance March 1.

Wrought Iron Pipe prices have been rearranged. A new list goes into effect March 1.

Galvanized Pipe will be sold at higher price than Black under new list.

Plumbers' Brass Work has been marked down slightly by manufacturers.

Shot prices have been reduced a fraction.

Window Glass may be further reduced in price next month.

Linseed Oil is quiet but strong, with possibility of a further advance.

METAL MARKET.

Pig Tin.—The market has advanced again sharply during the past week in sympathy with a continued upward movement in London, where there is an evident "corner" in spot Tin. The movement is also evidently securing support from the controlling interests in spot Tin here. Consumers are placing no confidence in the article, however. This is caused by the fact that the difference in spot against futures is still widening and now amounts to about 2c. here as well as in London. Business here throughout the entire week was by no means active, as under existing conditions consumers buy only from hand to mouth. Jobbers' prices rule from 1c. to 1½c. higher than last week, Straits Pig in small lots being quoted at 33c. to 33½c. per lb.

Copper. — The market is dull and without change, yet enough business is passing to keep prices quite steady. The London market has advanced slightly. The position of the entire market continues in its peculiarity. Spot, London, is on a parity with Electrolytic, and it is apparent that the European market is well controlled by certain American interests. Business in Europe is said to be a little inactive at the moment. The decrease of production of 2700 tons during the month of January is worth considering, and then the European production of 5865 tons is rather small. Small lots of Lake Ingot are quoted at 17¼c. to 17½c. per lb., and Ansonia Grade Casting Copper at 16¼c. to 16½c.

Sheet Copper. — No developments of any importance have occurred in this department. There is a fair amount of Sheet Copper moving into consumption. Orders are largely confined to moderate sized lots for present use. Prices are firm. Jobbers quote Sheet Copper in small quantities at 20½c. per lb., net.

Pig Lead.— There is absolutely no change in the condition of the market or in prices here. There is little buying beyond the ordinary consumptive demand. Prices remain very steady, small lots of American Pig ruling at 5⅛c. to 5¼c. per lb.

Spelter — Has declined rather sharply in Europe. The market here is in an unsettled condition. Buyers are shy and the market is quite dull. Small lots of good Western Spelter are quoted at about 5¼c. per lb.

St. Louis advices report practically no demand in that market. Prices rule a shade lower, but there were no sales to make the new prices absolute. Bidding was quite strong for export, but at prices unattractive to smelters.

Sheet Zinc.—A moderate demand is reported. Jobbers quote 600-lb. cask lots at 7¾c. per lb., and smaller quantities at 8c. to 8¼c.

Antimony— Is without change, with Cookson's selling in small lots at 11¼c. per lb., Hallett's at 10¼c. and U. S. at 10c. to 10¼c.

Nickel — Is still firm and scarce. The demand is said to continue in excellent volume, retail lots being quoted at 42c. to 45c. per lb., according to quantity.

Aluminum.— The demand continues active and prices unchanged. No. 1 Ingot, guaranteed over 99 per cent. pure, is quoted at 37c. per lb. for small lots, and 35c. for 100-lb. lots. Sheet Aluminum is quoted at 42c. per lb., base, net.

Tin Plates.—There is a strong market. Business of good volume is reported, and the trade generally is held to be in excellent condition. One by one the idle plants are resuming work, and the increased production is being steadily put into consumption. A feature of the present demand, which is regarded as peculiarly satisfactory, is that it is largely for Plates for immediate or early future use rather than for the covering of extended requirements. The local retail trade is well up to the average for the season. Jobbers quote small lots of American Bessemer Coke Tins, IC, 14 x 20, delivered at New York or corresponding point, at $5.25 to $5.30 per box. The English market is strong and prices higher.

The principal offices of the A. T. P. Company are now located in New York. Frank Dickerson has assumed the duties of general sales agent. A portion of the office force are now located in the Battery Park Building, where it is expected to quarter the entire force within a fortnight. Mr. Dickerson is still at 99 John street. Invoices for shipments from the Western district will be rendered from Elwood, Ind., and shipments from the Eastern districts from Pittsburgh, Pa.

Chicago advices are as follows: A large business is being done by manufacturers. Orders have already been entered for delivery in some months of this year

exceeding the total sales in the corresponding months of last year.

Sheet Iron.—There is more demand, and prices on Sheets are higher, due to anticipations of some action being taken by the new combine to advance prices. Galvanized Sheets are particularly strong. Jobbers quote No. 27 Common Black Sheets at 3.50c. to 3.55c., and Galvanized Sheets at 70 and 5 to 70 and 10 per cent. off, the latter being the lowest price quoted on specially desirable orders.

Chicago advices are as follows: The consolidation of the Western Sheet mills, which was accomplished last week, took buyers by surprise. They had not expected it was so nearly completed. They will now be obliged to pay considerably higher prices. Jobbers quote small lots from stock at 3.45c. for No. 27 Black, and 70 and 10 per cent. off for Galvanized Sheets.

Old Metals.—The demand continues tame, and the supply is increasing. Consequently prices are weak. Dealers quote about the following buying prices for moderate sized lots, delivered at yard in New York and vicinity:

Heavy Copper	per lb. 14 c.
Light and Tinned Copper	per lb. 12¼c.
Heavy Brass	per lb. 10 c.
Light Brass	per lb. 7¾c.
Lead	per lb. 4 c.
Tea Lead	per lb. 3½c.
Zinc	per lb. 3¼c.
No. 1 Pewter	per lb. 15 c.
No. 2 Pewter	per lb. 8 c.
Tin Plate Scrap, per gross ton	$6.00
Wrought Iron Scrap, per gross ton	13.50
Heavy Cast Scrap, per gross ton	11.00
Stove Plate Scrap, per gross ton	7.00
Burnt Iron, per gross ton	6.50

THE PIG IRON MARKET.

New York.—The market is very quiet, inquiries being few and far between. As yet the majority of the leading producers adhere firmly to prices and some of them turn down business for the second half. While, generally speaking, deliveries are well taken, instances are cropping up of founders asking for delays in deliveries. Prices are as follows: Lehigh and Schuylkill Irons, No. 1 Foundry, $24 to $25; No. 2 X, $22.50 to $22.75; No. 2 Plain, $21.50 to $22. Southern brands are quoted: No. 1 Foundry, $22.75 to $23; No. 2 Foundry, $21.50 to $22; No. 1 Soft, $22.25 to $22.75; No. 2 Soft, $21.25 to $21.75; No. 3 Foundry, $21.25 to $21.75.

Chicago.—The market is quiet. The leading Southern producers talk very cheerfully and are steadily maintaining prices, but some of the small companies are shading the regular schedule to effect sales. Few transactions are reported running above 100 tons. In one instance a lot of 1000 tons of a special grade was sold, but consumers are not inclined to place orders for future delivery. The situation is particularly strong on Charcoal Iron. Sales agents report very good collections. Foundrymen are paying their bills with gratifying promptness. We quote for cash as follows:

Lake Superior Charcoal	$25.50 to $26.00
Local Coke Foundry, No. 1	24.50 to 25.00
Local Coke Foundry, No. 2	23.50 to 24.00
Local Coke Foundry, No. 3	22.50 to 23.00
Local Scotch, No. 1	25.00 to 25.50
Ohio Strong Softeners, No. 1	24.50 to 25.50
Southern Silvery, according to Silicon	25.50 to 27.00
Southern Coke, No. 1	22.85 to 23.35
Southern Coke, No. 2	21.85 to 22.35

Philadelphia.—The feeling is a little weak on Pig Iron. Sellers are beginning to be anxious for business, and are therefore disposed to make concessions whenever there is a chance for a good sized order. Most of the lots asked for, however, are of unimportant quantities, and on these fairly uniform rates are quoted, particularly as they are wanted immediately, showing that very little stock is being carried. Makers of Pig Iron would like to have some new business come in, and if a moderate concession in price would bring it they would no doubt meet buyers' ideas, but so long as the present feeling continues there is no alternative but wait until buyers are ready. Meanwhile they are delivering about all the Iron they can make, and are, therefore, under no immediate necessity for new business. Sales have been made at a somewhat wider range of prices than usual, the extreme range being about as follows for seaboard or nearby points, with relatively lower prices at points within a radius of 100 miles west or south: No. 1 X Foundry, $24 to $25; No. 2 X Foundry, $22.75 to $23.75; No. 2 Plain, $22 to $22.50.

Pittsburgh.—The extraordinary demand for Bessemer Pig Iron is holding the market up. Eastern furnaces have also sold considerable tonnage of Iron and two large consumers are figuring on the purchase of additional blocks of Iron for March and April delivery. Foundry Iron is quiet, consumers buying only in small lots, believing that prices are as high as they will go and may decline. We quote No. 2 Southern Foundry, $22.35 to $22.60; No. 2 Local Foundry, $23; Bessemer, $24.50 or lower for small lots, and $24.90 for round lots from furnaces.

Cincinnati.—The entire field of Pig Iron both North and South, as seen from this point, has been absolutely devoid of anything bearing the slightest resemblance to any new feature. There has been very little movement among buyers except in the way of complaint regarding tardiness in shipping on old contracts. Agents here are constantly in hot water regarding deliveries, especially on Soft and Foundry grades. There is no inquiry which indicates immediate buying, and in the absence of a positive market the quotations are unchanged, and so far as can be judged will be strongly held. The trading of the past week has been mainly for lots under 200 tons, and pretty generally on the basis of $17.50, Birmingham, for No. 2 Foundry. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$21.50 to $21.75
Southern Coke, No. 2	20.50 to 20.75
Southern Coke, No. 3	19.50 to 19.75
Southern Coke, No. 4	18.75 to 19.25
Southern Coke, No. 1 Soft	21.50 to 21.75
Southern Coke, No. 2 Soft	20.50 to 20.75
Southern Coke, Gray Forge	18.75 to 19.25
Southern Coke, Mottled	18.75 to 19.25
Ohio Silvery, No. 1	.... to 30.00
Ohio Silvery, No. 2	.... to 29.00

St. Louis.—There is absolutely nothing of interest to mention beyond the remaining fact that the melting of Iron shows no let up. Those who have Iron due them are persistent in urging its prompt delivery, which in itself denotes the orders founders continue to enter. It is a fact, however, that but little disposition exists on their part to make new engagements for Pig Iron. A scattering quiet trade is generally reported by furnace representatives with not much change anticipated within a month. We quote on cars St. Louis:

Southern, No. 1 Foundry	$22.25 to $22.50
Southern, No. 2 Foundry	21.25 to 21.50
Southern, No. 3 Foundry	20.25 to 20.50
No. 1 Soft	22.25 to 22.50
No. 2 Soft	21.25 to 21.50

CHICAGO REPORT.

Scrap Iron and Steel.—Dealers are doing about all the buying at present, consumers holding off. Dealers quote buying prices as follows for full carloads, delivered on cars in Chicago:

	Per net ton.
Country Wrought Scrap	$14.00
Machinery Cast	$11.00 to 11.50
Malleable Cast	11.00
Stove Plate (free from burnt)	7.50
Burnt Iron and Grate Bars	7.00
Sheet Iron and Hoops	7.00
Plow Steel and Breaking Stock	10.00
No. 2, such as Shovels, Hoes, &c.	7.00
Old Boilers—whole (Iron)	9.00
Old Boilers (Iron)—cut in single Sheets and Rings	12.00
Old Gas Pipe and Boiler Tubes	$11.00 to 11.50
Cast Borings	8.50
Turnings	10.50
Horseshoes	14.00

Old Metals.—Dealers quote buying prices on small lots as follows, delivery on cars in Chicago:

	Per lb.
Copper Wire and Heavy	14 c.
Copper Bottoms	12 c.

Copper Clips	13 c.
Red Brass	13 c.
Yellow Brass	10 c.
Red Brass Borings	11 c.
Yellow Brass Borings	9 c.
Light Brass	7½c.
Pipe Lead	3¾c.
Tea Lead	3½c.
Zinc	3¼c.

Old Rubber.

	Per net ton.	Per lb.
Garden Hose	$30.00	.....
Air Brake Hose	50.00	.....
Rubber Shoes	....	8½c.
Rubber Car Springs, &c	....	5½c.
Inside Bicycle Tubing	....	20 c.
Outside Tubing	....	7 c.

Anthracite.— The situation is unchanged. Prices are firmly held, although trade is quiet. Chestnut continues to be held at $6, Chicago. Carload lots are quoted as follows, per net ton:

	Grate.	Egg and Stove.
Chicago, Ill	$5.50	$5.75
Milwaukee, Wis	5.50	5.75
St. Louis	5.75	6.00
Kansas City, Mo	7.50	7.75
Council Bluffs, Iowa	7.50	7.75
Lincoln, Neb	7.65	7.90
Sioux City, Iowa	7.90	8.15
Aberdeen, S. D	8.75	9.00
Dubuque, Iowa	6.80	7.05
Madison, Iowa	7.00	7.25
St. Paul, Minn	8.00	8.25
Burlington, Iowa	7.00	7.25
Des Moines, Iowa	7.50	7.75
Davenport, Iowa	6.80	7.05
St. Joseph, Mo	7.50	7.75
Leavenworth, Kan	7.50	7.75
Omaha, Neb	7.50	7.75

THE HARDWARE TRADE.

THE general condition of the market remains without important change. The volume of business is very fair, and both jobbers and manufacturers are executing a good many orders. While these are not in many cases for large quantities they indicate a healthy condition of trade and a disposition on the part of merchants to keep their stocks well sorted up. Indications point to a continuance of general prosperity throughout the country, and notwithstanding the high prices of material there appears to be a fair activity in building, for the most part the structures being of moderate cost. It is obviously a time when it is the part of wisdom for manufacturers and jobbers alike to be careful not to disturb the market by unnecessary concessions with a view, so far as jobbers are concerned, of disposing of stocks on hand, or, so far as manufacturers are concerned, of having their order books well filled. With the advance of the season it is anticipated that there will be a quickening in the demand, when probably in most lines of goods a large volume of business will be done by the trade. In some there will certainly be a shortage.

NOTES ON PRICES.

Wrought Iron Pipe.—For some time past it has been rumored among the jobbers of Plumbers' Supplies that the National Tube Company were at work compiling a new price-list, upon which all sales of Wrought Iron Pipe would be made after March 1, 1900. The company have progressed so far with the new list that typewritten copies of it have been given out to the trade, and it will be only a week or ten days from this date before the printed lists will be issued and the entire plan for the sale and distribution of the products of the various plants of the National Tube Company will be made known and put into force. We are assured that it will be in effect not later than March 1. We understand that a radical departure will be made, in many respects, from old trade customs and methods of doing business. One of these is the intention of the company to distribute their Merchant Pipe through the jobbers. When the knowledge of the formation of the National Tube Company became general, the jobbers, quite naturally, were anxious to know what the new company's attitude toward them would be. Rumors were current at the time that the National Tube Company proposed to sell direct to the consuming trade, without regard to the jobbers' interests, thus making it unprofitable for them to handle this company's Pipe. The National Tube Company denied the correctness of this state of feeling on the part of the jobbers, because they believe it so obviously to their interest to work with the jobbers that they will give them every reasonable protection, thus encouraging them to increase their Pipe business and turn a share of their orders to the company. It is believed that the existence of the National Tube Company will be a guarantee to the jobbers of a staple market and of a steady supply from which they can work. Heretofore the jobber, in order to make a fair profit on his goods, had to speculate on an advancing market, and every jobber knows that speculation is always fraught with more or less danger. In order to facilitate the basing of prices the National Tube Company have taken the Pittsburgh district as the point of lowest cost of production. In this district the finished article is made directly from the ore, and skelp is shipped from this district to the various mills located at other points. Therefore it has been decided to make Pittsburgh the only free delivery point at the basing prices. Deliveries at other points will also be made, but the price will be sufficiently higher than the Pittsburgh basing price to cover the extra cost of delivery. The company will issue a book containing the list price of each size and kind. This book will also contain freight rates from Pittsburgh to all other destinations. The list price will be the same for both Black and Galvanized Pipe. The Galvanized Pipe will be sold at a lower discount—*i. e.*, a higher price—than Black Pipe. The following is the new price list for both kinds:

Pipe List.

⅛-inch	$0.05⅛	3½-inch	$0.95
¼ "	.05⅛	4 "	1.08
⅜ "	.05⅛	4½ "	1.30
½ "	.08½	5 "	1 45
¾ "	.11⅛	6 "	1.88
1 "	.16½	7 "	2.35
1¼ "	.22⅛	8 "	2.82
1½ "	.27	9 "	3.40
2 "	.36	10 "	4.25
2½ "	.57⅛	11 "	4.75
3 "	.75½	12 "	5.20

Extra Strong Pipe List.

⅛-inch	0.29	pound	$0.11
¼ "	0.54	"	.11
⅜ "	0.74	"	.11
½ "	1.09	pounds	.12
¾ "	1.39	"	.15
1 "	2.17	"	.22
1¼ "	3	"	.30
1½ "	3.63	"	.36
2 "	5.02	"	.50
2½ "	7.67	"	.81
3 "	10.25	"	1.05
3½ "	12.47	"	1.33
4 "	14.97	"	1.50
4½ "	18.22	"	1.95
5 "	20.54	"	2.16
6 "	28.58	"	2.90
7 "	37.67	"	3.80
8 "	43	"	4.30

Double Extra Strong Pipe List.

⅛-inch	1.70	pounds	$0.25
¾ "	2 44	"	.30
1 "	3 65	"	.37
1¼ "	5.20	"	.52
1½ "	6.40	"	.65
2 "	9.02	"	.95
2½ "	13.68	"	1.37
3 "	18.56	"	1.92
3½ "	22.75	"	2.45
4 "	27.48	"	2.85
4½ "	32.53	"	3.30
5 "	38 12	"	3.80
6 "	53.11	"	5.30
7 "	62 38	"	6.25
8 "	71.62	"	7.20

Plumbers' Brass Work.—It is reported that the manufacturers of Plumbers' Brass Work have decided upon a slight reduction in the price of these goods.

Wire Cloth.—The threatened scarcity in the supply of Wire Cloth is becoming more pronounced. Jobbers are generally quoting at $1.60. A steady demand is reported

on the part of manufacturers of Screen Goods, which absorbs all the supply from the factories.

Shot.—Under date of February 19 the Eastern manufacturers of Shot issued a new price-list, which shows a slight reduction from the list sent out a few weeks ago. The new list is as follows

Drop Shot, sizes smaller than B, 25-pound bags, $1.47 per bag; 5 pound bags, 35 cents per bag.
Drop Shot, B and larger sizes, 25-pound bags, $1.72 per bag; 5-pound bags, 40 cents per bag.
Buck Shot, 25-pound bags, $1.72 per bag; 5-pound bags, 40 cents per bag
Chilled Shot, 25-pound bags, $1.72 per bag; 5-pound bags, 40 cents per bag.
Dust Shot, 25-pound bags, $2.10 per bag; 5-pound bags, 50 cents per bag.

Coffee Mills.—Chas. Parker Company, Meriden, Conn., have advanced the price on all styles of their Coffee Mills an average of about 10 per cent. This is the first change in price of these goods the firm have made for years.

Solder.—A further advance of 1 cent a pound has been made by the manufacturers of Solder, following the upward movement in Pig Tin. Jobbers now quote Half and Half Solder, guaranteed, at 21 to 22 cents per pound and No. 1 at 18 to 20 cents.

Block Tin Pipe.—In correspondence with the sharp rise in Pig Tin the price of Block Tin Pipe has been marked up to 45 cents per pound, subject to the usual trade discount of 20 per cent.

Wire Nails.—The recent unfavorable weather has temporarily affected the demand for Wire Nails at this point. New York jobbers have fixed a uniform price for Wire Nails in small lots from store at $3 60, which is slightly below manufacturers' price for less than carloads.

Cut Nails.—For some time local jobbers in New York have felt that the price of small lots of Cut Nails from store was unreasonably low. By concerted action they have now adopted $2.80 as the uniform price. This is 10 cents below the manufacturers' price to retailers.

Smooth Wire.—A better demand for Smooth Wire is reported, buyers placing orders more freely and for large lots. The tone of the market is strong, and it is intimated that prices may be advanced, effective March 1.

Window Glass.—The American Window Glass Company have closed a contract with the National Window Glass Jobbers' Association for the purchase outright of 600,000 boxes of Glass, and have given an option to the association for 500 000 additional boxes at the same price between the present time and May 1, 1900. The prices at which the Glass was sold are those which have been in force since February 1. The advantageous feature is that the limited apportionment has been removed, and, it is believed, permanently. The deal has for its object the crushing of outside competition. There is a rumor of a further reduction in price next month.

White Lead.—The outlook for an active spring demand for White Lead is bright. Orders have been placed covering early requirements, but contracts running through the entire year are not looked upon with much favor by large buyers. Prices remain unchanged.

Linseed Oil.—Contracts were placed for considerable Oil before the last advance in price. The market has been unusually quiet for the past week, and comparatively small lots have changed hands. The price of Oil is below that of Seed and has been so since the Seed market has been controlled. Few crushers have bought Seed on the advancing market. To buy now and meet the present price of Oil means a loss on every gallon made. While there may be further advances in the price of Oil the trade are distrustful of the future.

Spirits Turpentine.—The Turpentine market is dull. Early in the week the market was ½ cent higher, but fell off upon less confident reports from Savannah.

The Board of Supervising Inspectors of the United States Steamboat Inspection Service has approved coil and pipe boilers presented by the following persons and firms: American Fire Engine Company, Cincinnati, Ohio; Barr & Creelman, Rochester, N. Y.; W. J. Boland, Chicago, Ill.; Ed. Cheetham, Detroit, Mich.; International Power Company, Providence, R. I.; Geo. E. Jones, Newark, N. J.; W. E. Jenkins and A. Stokey, Tacoma, Wash.; Geo. Krill & Bro., Baltimore, Md.; Chas. Kellogg, Athens, Pa.; Harry Lawson, Jersey City, N. J.; S. C. Lighthill, Allegheny, Pa.; Geo. Lawley & Son, Corporation, Boston, Mass.; W. S. Lowe, Lima, Ohio; Joseph C. Lesley, St. Albans, Vt.; Walter MacFarlane, Seattle, Wash.; Thomas F. Morrin, Brooklyn, N. Y.; Archibald Pifer, Braidentown, Fla.; J. E. Parker, Chicago, Ill.; Erdix Rounds, Owensboro, Ky.; Wallace Stebbins & Sons, Baltimore, Md.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED FEBRUARY 23, 1900.

The following New York quotations are for small lots:

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.
Small lots.....₩ ℔, 37¢
100-℔ lots.....₩ ℔, 35¢
Aluminum Sheet, B. & S. gauge.

In lots of 50 ℔s or more.	6-in. and less	14-in. and less	24-in. and less
	₩ ℔	₩ ℔.	₩ ℔.
Nos. 13 to 19	$0.42	$0.44	$0.47
" 20	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24	.46	.50	.53
" 25	.47	.51	.54
" 26	.47	.54	.59
" 27	.48	.57	.62
" 28	.48	.57	.64
" 29	.49	.60	.69
" 30	.50	.64	.77

Note.—Lots of less than 50 ℔s 5¢ ₩ ℔ extra.

Antimony—

Cookson.....₩ ℔, 11½¢
Hallett's.....₩ ℔, 10½¢
U. S.....₩ ℔, 10@10½¢

Brass—Planished.....net

Roll and Sheet .....20% off

Brass and Copper Tubes

Brazed Brass Tubing—

Brown & Sharpe's Gauge the Standard.

List Feb. 26, 1896.

Plain Round Tube.	Per ℔.
⅜-in. up to 2-in.	$0.35
5/16-in. up to ¾-in.	.36
¼-in. up to 5/16-in.	.38
3/16-in. up to ¼-in.	.41
5-16-in. up to ⅜-in.	.48
¼-in. up to 5-16-in.	.65
3-16-in. up to ¼-in.	1.00
⅛-in. up to 3-16-in.	1.50
Smaller than ⅛-in.	Special
3-in. and larger	Special
2-in. to 3-in. to No. 19, inclusive.	.38

35% off.

Copper & Bronze Tubing—

3¢ ₩ ℔ more than Brass.

Conductors—

Corrugated. *Round or Square.*—

Galvanized ⅛ or more, N'st'd. 60&20&2½%
" Less than ⅛, Nested..... 60&20%
" Locked Joints, ⅛ or more, Nested.....60&20&2½%
Galvanized Locked Joints, less than ⅛, Nested.....60&20%

Spiral Riveted.

Galvanized.....40%
See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—See *Strainers, Conductor.*

Copper—

Bottoms, Pits and Flats ₩ ℔ 24½¢ basis
Lake Ingot.....17½¢
Ansonia Grade Casting.....16½¢
Planished.....net
Sheet and Bolt.....20½¢ ₩ ℔ basis

Eaves Troughs—

List Feb. 1, 1895.

Lap or Slip Joint, Galvanized, in crates 75&10%

Eave Trough Mitres—

Lap or Slip Joint.....list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin.....30%
Galvanized.....30%

Stove Pipe—

New York Four-Piece.

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz
No. 2.	.65	.70	.75	.80	.85 "
No. 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Corrugated

Round or Square.

Galvanized.....60%

Gasoline—See *Petroleum Products.*

Iron, Sheet—*Black.*

	Common American.	R. G. Cleaned American.
Nos. 10 to 16	₩ ℔, 3.35	3.35¢
Nos. 17 to 21	₩ ℔, 3.40	3.45¢
Nos. 22 to 24	₩ ℔, 3.45	3.55¢
Nos. 25 and 26	₩ ℔, 3.50	3.60¢
No. 27	₩ ℔, 3.55	3.65¢
No. 28	₩ ℔, 3.60	3.75¢

Russia, Planished, &c.

Genuine Russia, according to assortment.....₩ ℔ 10½¢
Do. Stained.....8¢@10¢
Patent Planished ₩ ℔ A, 10½¢; B, 9½¢ net

Galvanized.

Nos. 10 to 16	₩ ℔, 12¢	70&5@70&10% off.
Nos. 17 to 21	₩ ℔, 13¢	
Nos. 22 to 24	₩ ℔, 14¢	
Nos. 25 to 26	₩ ℔, 15¢	
No. 27	₩ ℔, 16¢	
No. 28	₩ ℔, 17¢	
No. 29	₩ ℔, 19¢	
No. 30	₩ ℔, 21¢	

36 in. 1¢ ₩ ℔ higher

Kerosene—See *Petroleum Products*

Lead—

American Pig	5½@5¾¢
Bar	5¾¢
Pipe (full coils and lengths)	7 ¢
Pipe (cut coils and lengths)	7½¢
Tin Lined Pipe	12½¢
Block Tin Pipe	45 ¢
Sheet Lead (full rolls)	8 ¢
Sheets (cut rolls)	9 ¢

20% off.

Old Lead in exchange, 4½¢ ₩ ℔.

Mitres, Eave Trough—See *Eave Trough Mitres.*

Nickel—

Per ℔.....42@45¢

Paints, Oils, &c.—

Lead, White, Atlantic and Jewett's	7½¢
Lead. Amn. White, in oil	7½¢
Lead, Red, bbls. and ⅛ bbls	7½¢
Lead, Red, kegs	7½¢
Linseed Oil:	
Raw, ₩ gal	58¢
Boiled	60¢
Spirits Turpentine:	
In bbls	.57 ¢
In cases	.65 ¢
Putty:	
In barrels and ⅛ bbls	2¼¢
In tubs	2¼¢
In tin cans	3¼¢
In bladders	2½¢

Palm Oil. 1500 ℔ casks.

Fancy Lagos	₩ ℔ 6½¢
Clarified	₩ ℔ 5¾¢
Accra	₩ ℔ 5⅝¢
Half Jack	₩ ℔ 5⅜¢

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline	₩ gal. 13@14¢
Kerosene	₩ gal. 12½@13¢

Pipe, Drain.....50%

Pipe, Spiral—See *Conductors.*

Registers—

List Feb. 1, 1899.

Black Japanned	30%
White Japanned	25%
Nickel Plated	30&10%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze	30%
Electroplated in Brass, Bronze or Copper	30&10%
White Porcelain	20%
Solid Brass and Bronze Metal	20%

Roofing Material—

Asphaltum, Trinidad Refined, ₩ ton	$30.00@$35.00
Asphaltum, Rock. ₩ ton	$14.00
Heavy Single Ply Tar Felt	₩ ℔ 2½¢
2 Ply Roofing Felt, ₩ roll, 108 sq. ft.	$1.30
3 Ply Roofing Felt, ₩ roll, 108 sq. ft.	1.70
Roofing Pitch ₩ bbl	$2.40@$2.50

Rosin

(Barrels of 280 ℔. Barrels weigh actually about 400 ℔).

Common and Good—Strained.	
Rosin, C. & D	₩ bbl. $1.62½@$1.65
Rosin, E. & F	₩ bbl. 1.70 @ 1.75
Rosin, G. & H	₩ bbl. 1.80 @ 1.95
Rosin, I. & K	₩ bbl. 2.10 @ 2.25
Rosin, M. & N	₩ bbl. 2.60 @ 3.00

Seamless Brass Tubes—

Net List, February 6, 1899.

Shoes and Elbows—See *Elbows and Shoes.*

Slate Roofing—

According to size, f. o. b. cars, Quarry Station.

Pennsylvania:	
Best Bangor, ₩ sqr	$3.00@$4.00
No. 1 Bangor Ribbon, ₩ sq	2.85@ 3.25
Pen Argyle, ₩ sqr	3.00@ 3.75
Peach Bottom, ₩ sqr	4.75@ 5.35
No. 1 Penna. Black, ₩ sqr.	2.80@ 3.50
No 1 Chapman Keystone, ₩ sqr	3.25@ 4.25
Vermont:	
Sea Green, ₩ sqr	$2.50@$3.15
Purple, ₩ sqr	3.75@ 4.25
Unfading Green, ₩ sqr	3.00@ 4.25
Red, ₩ sqr	7.00@11.00
Maine:	
Brownville, Unfading Black:	
No. 1 quality	$5.00@6.50
No. 2 quality	$4.00@5 50

Solder and Soldering Fluids—

Solder—

⅛&¼ guaranteed	21@22¢
No. 1	18@20¢

Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Acme Soldering Flux.

Per gal.....60¢

Concentrated Soldering Flux.

f.o.b. New York.

In barrels, ₩ ℔	4¢
Smaller quantities, ₩ ℔	5¢

Eureka Soldering Flux—Triple Strength.

In barrels, ₩ ℔	3 ¢
Smaller quantities, ₩ ℔	3½¢

Eureka Soldering Flux—Extra Concentrated

In barrels, ₩ ℔	4½¢
Smaller quantities, ₩ ℔	5 ¢

Eureka Soldering Flux—Crystal.

In 100-℔ cases, ₩ ℔.....7¢

Gedney's Soldering Fluid.

In carboys or barrels, ₩ ℔.....2¢
$1.50 for carboy or barrel; money refunded when returned.

Kester's Soldering Salts.

Half-℔ can	25¢
1-℔ can	50¢
5-℔ can	$1.50

Lennox Soldering Fluid.

In barrels, ₩ ℔	2¢
In carboys, ₩ ℔	3¢

Perfection Soldering Flux.

No charge for package.

Bbls. about 500 ℔, ₩ ℔	3¢
⅛ bbls., about 300 ℔, ₩ ℔	3½¢
Kegs, about 110 ℔, ₩ ℔	3½¢
Kegs about 55 ℔, ₩ ℔	4¢

Yager's Soldering Salts.

1 ℔ bottles, each	60¢
5 ℔ bottles, ₩ ℔	40¢

Soldering Coppers—

Per ℔.....22½@23¢

Spelter—

Western Spelter.....5¼@5½¢

Spiral Pipe—See *Conductors.*

Stove Pipe Elbows—See *Elbows, Stove Pipe.*

Stove Trucks—See *Trucks, Stove.*

Strainers, Conductor—

Galvanized.....50%

Tin Pigs and Bars—

Banca, Pigs, ₩ ℔	33½@34¢
Straits, pigs, ₩ ℔	33@33½¢
Straits, in bars, ₩ ℔	34@34½¢

Tin Plates, American Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland Grade:		
IC,	14 x 20	$7.50
IX,	14 x 20	9.00
IXX,	14 x 20	10.25
IXXX,	14 x 20	11.50
IXXXX,	14 x 20	12.75
Melyn Grade:		
IC,	14 x 20	7.00
IX,	14 x 20	8.50
IXX,	14 x 20	9.75
IXXX,	14 x 20	11.00
IXXXX	14 x 20	12.25
Allaway Grade:		
IC,	14 x 20	6.15
IX,	14 x 20	7.25
IXX,	14 x 20	8.35
IXXX,	14 x 20	9.45
IXXXX,	14 x 20.	10.55

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC, 14 x 20	$5.30@5.40
"	IX, 14 x 20	$6.25@6.30

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 ℔	15¢
95 ℔	20¢
90 ℔	25¢
85 ℔	30¢

Terne Plates—

N. B.—The following prices are for IC, 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance:

About 40 ℔ coating	$16.25@16.75
About 30 ℔ coating	14.50@15.00
About 20 ℔ coating	13.00@14.00
About 15 ℔ coating	11.50@12.00
About 8 to 10 ℔ coating	10.50@10.75

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)	$13.00
IXX, 14 x 28..(112 sheets)	14.00
IXX, 14 x 31..(112 sheets)	15.50

Troughs Eave—See *Eave Trough*

Trucks, Stove—

Improved Lock Frame, per doz	$15.00
Steel Lock Frame, per doz	18.00
Daisy Improved pattern, ₩ doz	18.00

Tubing—

Tin.....50% | Galvanized.....50%
Fittings for do.....40%

Zinc—

600 ℔ casks ₩ ℔.....7¾¢
Per ℔.....8@8¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Fittings—

List of Oct 7, 1899.

Cast Iron Fittings, Black and Galvanized, Standard sizes.....55%
Cast Iron Bushings and Plugs.....55%
Cast Iron Flanges.....55%
Malleable Iron Fittings.....35@40%
" " Bushings.....55%
" " Unions.....55%
Wrought " Nipples.....50@55%
" " Couplings.....55%
" " Long Screws.....60%

Cast Iron Soil Pipe—

2 to 6 inch inclusive.

Standard.....45%
Extra Heavy.....50%
All Fittings.....55%

Wrought Iron Pipe—

List Feb. 22, 1899.

1¼ and less, Plain	40@45%
1¼ and less, Galv	45@50%
1½ and larger, Plain	43@45%
1½ and larger, Galv	45@50%

Screw and Socket Joint Casing.....45@45&10%
Inserted Joint Casing.....40&10@45%

Valves, Cocks, &c.—

Iron Body Valves	60&10%
Air Cocks and Radiator Air Cocks	60&10%
Soldering Unions	60&10%
" Nipples	60&10%
Brass Unions (Rough and Finished)	60%
Jenkins Bros.':	
Iron Body Valves, except Gate Valves	55%
All Iron Valves, except Gate Valves	40%
Iron Body Gate Valves	50%
All Iron Gate Valves	35%
Iron Cocks, all Iron	60&10%
" " with Brass Plugs	60%
Brass Globe, Angle and Cross Valves	50&10%
" and Angle Valves, hose outlet	50&10%
Brass Garden Hose Valves	50&10%
" Horizontal, Vertical and Angle Check Valves	50&10%
Brass Safety Valves	55%
" " " Low Pressure	55%
" Radiator Valves	65%
" " Jenkins	55%
Brass Jenkins' Globe, Angle, Cross and Corner Valves	55%
Brass Jenkins' Safety and Check Valves	40%
Brass Jenkins' Gate Valves	50%
Brass Steam Cocks	50&10%
" Gas Meter and Union Meter Cocks	50&10%
Brass Fittings, Rough	60%
" " Finished	60%
" Bushings	60%

Plumbers' Brass Work—

List of December 7, 1896.

Ground Key Work:

Rough	55@60%
Finished	50@55%
Compression Work	50@55%
Chain Stays	55%

Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face	₩ set $1.10	$1.25
Ground Face	₩ set $1.25	$1.40

Basin Plugs	50&10%
Sink or Bath and Wash Tray Plugs	50&10%
Basin Clamps	40@80¢ ₩ doz. net

Bath Tubs—

Copper Lined Bath Tubs	35%
Galvanized Steel Enamel Bath Tubs, list of February 1, 1899	50@50&10%
Steel Clad Copper Lined Bath Tubs, list of Feb. 1, 1899	40@45%
Porcelain Lined Iron Bath Tubs	20%
Solid Copper, list of Feb. 1, 1899	20%

Boilers—

Standard Boilers:	
30, 35 and 40 gal	60%
Other sizes up to 52 gal	55%
53 gal and above	45%
Extra Heavy Boilers:	
18 to 52 gal	50%
53 gal. and above	40&5%

Sinks—

Cast Iron—

	Black	Galv.
Sinks, Square, Half Round and Corner	45%	50%
Sink Legs	45%	50%
Sink Backs	45&5%	50&5

Wrought Steel—

Columbus, Galv'd and Enameled	45%
Columbus, Painted	30%
L. & G	50%

Miscellaneous—

Earthenware, List of July 17, 1899	
Basins, Urinals and Hoppers	40%
Closet Bowls, Sundries, Washouts and Pedestals	40%
Drawn Lead Traps, List of Aug. 2, 1897	30@35%

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Acme Gas Stove Co 9
Adam, W. J..... 19
Adler, H. Co..... 9
Æolipyle Co..... 13
American Corrugating Co.... 68
American Steel Roofing Co... 60
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Wood, Alan Co..... 62
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Woodside, James..... 59
Young, Jos. H..... 19
Zero Valve Co..... 19
Zucker & Levett & Loeb Co.. 17

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FOR ALL PURPOSES.

METALS PERFORATED AS REQUIRED FOR

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Woolen, Cotton Paper and Pulp Mills,
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Standard Sizes Perforated Tin and Brass Always in Stock.

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EASTERN OFFICE. - - No. 284 Pearl St., NEW YORK. No. 217 North Union St., Chicago, Ill., U. S. A.

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Starr Acetylene Gas Burner Co., Chattanooga, Tenn.

Acetylene Gas Generators.
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Giessel, Henry & Co., Chicago.
International Heater Co., Utica, N.Y.

Agate Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., N. Y.

Aluminum Ingots.
Janney, Steinmetz & Co., Phila., Pa.

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Janney, Steinmetz & Co., Phila., Pa.

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Janney, Steinmetz & Co., Phila., Pa.

Aluminum Ware.
Hill, Whitney & Wood Co., Waltham, Mass.

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Frand, Martin J. & Co., Camden, N. J.
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Frank & De Keyser, 172 Fulton Street, N. Y.

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Wheeler, E. S. & Co., New Haven, Ct.

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I. X. L. Beer Pump Co., Phila., Pa.

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American Tin Plate Co., New York.

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Koven, L. O. & Bro., 18 Spruce Street, N. Y.

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Hungerford, U. T. Brass & Copper Co., 121 Worth St., N.Y.

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Barnard, W. H. & Co., Norfolk, Va.

Burners, Acetylene.
Starr Acetylene Gas Burner Co., Chattanooga, Tenn.

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Bliss, E. W. Co., Brooklyn, N. Y.
Gordon, W. J., Phila., Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Robinson, J. M. & Co., Cincinnati, O.
Stiles & Parker Press Co., Brooklyn, N. Y.
Toledo Machine & Tool Co., Toledo, O.

Castings, Iron.
Cheney, S. & Son, Manlius, N. Y.

Ceilings, Metallic.
American Corrugating Co., St. Louis, Mo.
Berger Mfg. Co., Canton, O.
Brooklyn Metal Ceiling Co., Brooklyn, N. Y.
Canton Steel Roofing Co., Canton, O.
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Kanneberg Roofing Co., Canton, O.
Missouri Sheet Metal Ornament Co., St. Louis, Mo.
New York Iron Roofing & Cor. Co., Jersey City, N. J.
Vogan & Strauss, Kenosha, Wis.

Cellar Drainers.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Chimney Caps.
Woodside, James, Hawarden, Iowa.

Chimney Top Ventilators.
Iwan Bros., Streator, Ill.

Cocks, Ball, Basin and Stop.
Stebbins, E. Mfg. Co., Brightwood, Mass.

Coils.
National Pipe Bending Co., New Haven, Conn.

Combustion Regulator.
Æolipyle Co., 117 Beekman St., N. Y.

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Acme Steel Roofing Co., Cincinnati, O.
Berger Bros. Co., Philadelphia, Pa.
Canton Steel Roofing Co., Canton, O.
Cincinnati Corrugating Co., Piqua, O.
Kanneberg Roofing Co., Canton, O.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
McClure & Co., Pittsburgh, Pa.
Marlin & Co., Pittsburgh, Pa.
Reeves Iron Co., Canal Dover, O.
Souther, E. E. Iron Co., St. Louis, Mo.
Weyand, Henry, Waterbury, Ct.

Conductor Pipe Hangers.
Iwan Bros., Streator, Ill.

Cooking Utensils.
Hill, Whitney & Wood Co., Waltham, Mass.

Copper, Roofing and Cornice.
Gummey, McFarland & Co., Phila., Pa.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N.Y.

Cornice Machinery.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Keene, Geo. C. & Co., Cincinnati, O.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. & Co., Cincinnati, O.

Cornice Work, Galvanized Iron.
Garry Iron & Steel Roofing Co., Cleveland, O.
Marlin & Co., Pittsburgh, Pa.

Couplings. *(See Pipe Couplers.)*

Cut Offs, Rain Water.
Cooney & Geiger, Indianapolis, Ind.

Dampers.
Greene, W. F., Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

Deflectors.
Rutherford, J. & Son, Akron, O.

Die Stocks.
Curtis & Curtis, Bridgeport, Ct.
Fowler Automatic Draft Reg. & Vent. Co., Lawrence, Mass.

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Bliss, E. W. Co., Brooklyn, N. Y.
Toledo Mach. & Tool Co., Toledo, O.

Dumb Waiters.
Energy Mfg. Co., Phila., Pa.

Eave Troughs.
Berger Bros. Co., Philadelphia, Pa.
Berger Mfg. Co., Canton, O.
Eller, J. H. & Co., Canton, O.
Kanneberg Roofing Co., Canton, O.
Marlin & Co., Pittsburgh, Pa.
Souther, E. E. Iron Co., St. Louis, Mo.
Weyand, Henry, Waterbury, Ct.

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Berger Bros. Co., Phila., Pa.
Berger Mfg. Co., Canton, O.

Eave Trough Machines.
Marlin & Co., Pittsburgh, Pa.

Elbows, Stove Pipe.
Hill, Jas. Mfg Co., Providence, R. I.
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Shepard, Sidney & Co., Buffalo, N. Y.
Souther, E. E. Iron Co., St. Louis, Mo.

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Hanson & VanWinkle Co., Newark, N.J.
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Lalance & Grosjean Mfg. Co., 19 Cliff St., New York.
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Clark Novelty Co., Rochester, N. Y.
Hoxie & Clark, Rochester, N. Y.
Litchfield, J. M., 105 Beekman St., N.Y.

Fire Brick.
Presbrey Stove Lining Co., Taunton, Mass.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

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Burgess Soldering Furnace Co., Columbus, Ohio.
Clayton & Lambert Mfg. Co., Detroit, Mich.
Indianapolis Steel Roofing & Cor. Co., Indianapolis, Ind.
Turner, W. W & Co., Chicago, Ill.

Fire Sets.
Troy Nickel Works, Troy, N. Y.

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Illinois Mall. Iron Co., Chicago, Ill.
Lawler Water Feed & Damper Regulator Co., 181 Mercer St., N. Y.

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Illinois Malleable Iron Co., Chicago, Ill.

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Peck, Stow & Wilcox Co., 27 Murray St., N. Y.

Foundry Facings and Supplies.
Obermayer, S. Co., Cincinnati O.

Furnace Pipe and Fittings.
Hessler, H. E. Co., Syracuse, N. Y.
International Heater Co., Utica, N. Y.

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Barstow Stove Co., Providence, R.I.
Bergstrom Bros & Co., Neenah, Wis.
Cory, Uzal & Co., 210 Water St., N. Y.
Dignton Furnace Co., Taunton, Mass.
Floyd, Wells & Co., Royersford, Pa.
Giblin & Co., Utica, N. Y.
Graff & Co., 208 Water St., N. Y.
Hart & Crouse Co., Utica, N. Y.
Hess, Snyder & Co., Massillon, O.
International Heater Co., Utica, N. Y.
Kelsey Furnace Co., Syracuse, N. Y.
Lennox Machine Co., Marshalltown, Iowa.
Magee Furnace Co., Boston, Mass.
Mueller, L. J. Furnace Co., Milwaukee, Wis
Schwab & Sercomb, Milwaukee, Wis
Sheppard, Isaac A. & Co., Phila., Pa.
Stamford Foundry Co., Stamford, Ct.

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Keen & Hagerty Mfg. Co. Baltimore, Md.

Gas Appliances.
Crane, . M. Co., 1131 B'way, N. Y.

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Condon, John, Philadelphia, Pa.

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Gas Machines.
Giessel, Henry & Co., Chicago.
Kemp, C. M. Mfg. Co., Baltimore, Md.

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Fowler Automatic Draft Reg. & Vent. Co., Lawrence, Mass.
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Hart & Crouse Co., Utica, N. Y.
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Clad, V & Sons, Phila., Pa.

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American Corrugating Co., St. Louis, Mo.
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Lead Pipe.
Colwell Lead Co., 63 Centre St., N. Y.

Lead Washers.
Littleford Bros., Cincinnati, O.

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Incandescent Light & Stove Co., Cincinnati, O.

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Washburne, E G. & Co., 46 Cortlandt St., N. Y

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Seavey Mfg. Co., Boston, Mass.

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Trench, Stewart & Co., 73 Beekman St., N. Y.

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Munsell, Eugene & Co., 218 Water St., New York.

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Zucker & Levett & Loeb Co., 526-530 W. Twenty-fifth St., New York.

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Ovens, Portable.
Adler, H. Co., Pittsburgh, Pa.
Griswold Mfg. Co., Erie, Pa.
National Vapor Stove Mfg. Co., Lorain, O.

Patent Solicitors.
Hamlin, G. R., Washington, D. C.
Howson & Howson, Philadelphia, Pa.
Stocking, E. B., Washington, D. C.

Patterns.
Cope, Geo. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, Ohio.
Remmers Pattern Co., St. Louis, Mo.
Vedder Pattern Wks., Troy, N. Y.

Perforated Sheet Metal.
Harrington & King Perforating Co., Chicago, Ill.

Pig Iron.
Wister, L. & R. & Co., Philadelphia, Pa.

Pipe Crimper.
Wheeler, W A., Indianapolis, Ind.

Pipe, Water and Gas.
Tufts, Walter B., 96 John St., N. Y.

Plumbers' Tools, Specialties and Supplies.
Barstow Stove Co., Providence, R. I.
Clayton & Lambert Mfg. Co., Detroit Mich.
Colwell Lead Co., 63 Centre St., N. Y.
Illinois Malleable Iron Co, Chicago, Ill.
Lawler Water Feed & Damper Regulator Co, 181 Mercer St., N. Y.
National Pipe Bending Co., New Haven, Conn.
Stebbins, E. Mfg. Co., Brightwood, Mass.
Wheeler, E. S. & Co., New Haven, Ct.
Young, Jos H., Boston, Mass.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Pokers and Lifters.
Stover Mfg. Co., Freeport, Ill.
Troy Nickel Works, Troy, N. Y.

Potato Masher.
Vogel, Wm. & Bros., 37 to 47 S. 9th St., Brooklyn, N. Y.

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Ferracute Machine Co., Bridgeton, N.J.
Gordon, W. J., Philadelphia, Pa.
Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. & Co., Cincinnati, O.
Rudolphi & Krummel, Chicago, Ill.
Stiles & Parker Press Co., Brooklyn, N. Y.

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Hess, Snyder & Co., Massillon, O.
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Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland Conn.
Robinson, J. M. & Co., Cincinnati, O.
Toledo Mach. & Tool Co., Toledo, O

Radiators, Steam and Hot Water.
Gurney Heater Mfg. Co., Boston, Mass.

Range Boilers.
Koven, L. O. & Bro., 18 Spruce St., N. Y.

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Frink, I. P., 551 Pearl St., New York.

Refrigerators.
Grand Rapids Refrigerator Co., Grand Rapids, Mich.
Gurney Refrigerator Co., Fond du Lac, Wis

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Cleveland Drill & Register Co., Cleveland, O.
Dighton Furnace Co., Taunton, Mass.
Highton, Wm. & Sons, Boston, Mass.
Independent Register Co., Cleveland, Ohio.
Michigan Barrel Co., Grand Rapids, Mich.
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Schwab & Sercomb, Milwaukee, Wis.
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Roasters and Bakers.
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Roof Gutters.
Tucker Mfg. Co., Newark, O.

Roofing Cement and Paint.
Dixon, Jos. Crucible Co., Jersey City, N. J.

Roofing and Siding, Iron and Steel, Corrugated and Plain.
American Corrugating Co., St. Louis, Mo.
Berger Mfg. Co., Canton, O.
Burton, W. J. & Co., Detroit, Mich.
Canton Steel Roofing Co., Canton, O.
Cincinnati Corrugating Co., Piqua, O.
Eller, J. H. & Co., Canton, O.
Garry Iron & Steel Roofing Co., Cleveland, O.
Gummey, McFarland & Co., Phila., Pa.
Holton Iron Roofing Co Lisbon, O.
Kanneberg Roofing Co., Canton O.
New York Iron Roofing & Cor. Co., Jersey City, N. J.
Reeves Iron Co., Canal Dover, Ohio.

Roofing Nails.
Salem Nail Co., 279 Pearl St., N.Y.

Roofing Slate.
Bray, J. & Co., E. Bangor, Pa.
Galt, John & Sons, 253 Broadway, N.Y.
Johnson, E. J. & Co., 38 Park Row, N.Y.

Sap Spouts.
Millar, C. & Son Co., Utica, N Y.

Schools and Colleges.
International Correspondence Schools, Scranton, Pa.
United Correspondence Schools, 154-158 5th Ave., N. Y.

Screens.
Harrington & King Perforating Co., Chicago, Ill.

Sheet Metal Machinery.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Ferracute Machine Co., Bridgeton, N.J.
Keene, Geo. C. & Co., Cincinnati, O.

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Miner & Peck Mfg. Co., New Haven, Conn.
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Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. & Co., Cincinnati, O.
Rudolphi & Krummel, Chicago, Ill.
Stiles & Parker Press Co., Brooklyn, N. Y.

Sheet Metal Ornaments.
Missouri Sheet Metal Ornament Co., St. Louis, Mo.

Sheet Zinc.
American Nickeloid Co., Peru, Ill.

Sheets, Galvanized.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Bruce & Cook, 186 to 190 Water St N. Y.
Cinn Corrugating Co., Piqua, Ohio.
McClure & Co., Pittsburgh, Pa.
McCullough Iron Co., Wilmington, Del.
National Steel Co., Bridgeport, O.
Reeves Iron Co., Canal Dover Ohio.
Struthers Iron & Steel Co , Struthers, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.
Wood Alan Co., Philadelphia, Pa.

Sheets, Iron and Steel.
Apollo Iron & Steel Co., Pittsburgh, Pa
Berger Mfg. Co., Canton, O.
Bruce & Cook, 186 to 190 Water, St. N. Y.
Cincinnati Corrugating Co., Piqua, O.
Coshocton Rolling Mill Co., Coshocton, Ohio
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Kirkpatrick & Co., Ltd., Pittsburgh, Pa.
McCullough Iron Co., Wilmington, Del.
National Steel Co., Bridgeport, O.
Osborn, J. M. & L. A., Cleveland, O.
Struthers Iron & Steel Co., Struthers, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.
Wellsville Plate & Sheet Iron Co., Wellsville, O
Wood, W. D. Co., McKeesport, Pa.
Wood Co., Alan Philadelphia, Pa.

Shingles and Tiles, Metallic.
Burden, W. J. & Co., Detroit, Mich.
Cortright Metal Roofing Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Thorn Shingle & Ornament Co., Philadelphia, Pa.

Shot.
Colwell Lead Co., 63 Centre St., N. Y.

Siding. (*See Roofing and Siding.*)

Skylights.
Canton Steel Roofing Co., Canton, O.
Rasner & Dinger, Pittsburgh, Pa.

Slaters' Tools.
Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

Snow Guards.
Halliday, C. G., East 9th St., N. Y.

Soap and Sponge Racks.
Frank & De Keyser, 172 Fulton Street, N. Y.

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Bruce & Cook, 186 to 190 Water St., NY.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Sanborn, J., 217 Water St., N. Y.
Taylor, N. & G. Co., Philadelphia, Pa.

Soldering Furnaces.
Burgess Soldering Furnace Co., Columbus, Ohio.
Indianapolis Steel Roofing & Cor. Co., Indianapolis, Ind.
Turner, W. W. & Co., Chicago, Ill.

Speaking Tubes and Whistles.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.

Specialties, Sheet Metal.
Vogel, Wm. & Bros., Brooklyn, N. Y.

Stamping, Sheet Metal.
Hill, Whitney & Wood Co., Waltham, Mass.

Steam and Gas Fitters' Supplies.
Curtis & Curtis, Bridgeport, Conn.

Steam and Water Engineering and Regulating Specialties.
Kieley & Mueller, 7-11 West 13th St., N. Y.

Steel Stamps and Stencil Dies.
Schwerdtle & Siebert, Bridgeport, Ct.

Stove Cement.
Dixon, Jos. Crucible Co., Jersey City, N. J.

Stove Linings.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Newton, W. M., Albany, N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Taylor, Chas. Sons Co., Cincinnati, O.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Stove and Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind. Ill.
Rutland Fire Clay Co., Rutland, Vt.

Stove Patterns.
Brighton Pattern Works Cincinnati, O.
Cope, G. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, O.
Vedder Pattern Works, Troy, N. Y.

Stove Pipe.
Reeves Iron Co., Canal Dover, Ohio.

Stove Pipe Thimbles.
Cheney, S. & Son, Manlius, N. Y.
O. K. Mfg. Co., Buffalo, N. Y.

Stove Repairs.
Hessler, H. E. Co., Syracuse, N. Y.
Marcy Stove Repair Co., 74 Beekman St. N. Y.
Troy Nickel Works, Troy, N. Y.

Stove Trimmings, &c.
Fanner Mfg. Co., Cleveland, O.
Greene, W. F., Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

Stove Trucks.
Mersick, C. S. & Co., New Haven, Conn.

Stoves and Ranges.
Barstow Stove Co., Providence, R. I.
Bergstrom Bros. & Co., Neenah, Wis.
Eclipse Stove Co., Mansfield, O.
Floyd Wells & Co., Royersford, Pa.
Giblin & Co. Utica, N. Y.
Graff & Co., 208 Water St., N. Y.
Hess, Snyder & Co., Massillon, O.
Magee Furnace Co., Boston, Mass.
Ringen Stove Co., St. Louis, Mo.
Schneider & Trenkamp Co., Cleveland, Ohio.
Sheppard, Isaac A. & Co., Phila., Pa.
Stamford Foundry Co., Stamford, Ct.
Weir Stove Co., Taunton, Mass.

Stoves and Ranges, Gas.
Acme Gas Stove Co., Buffalo, N. Y.
Adler, H. Co. Pittsburgh, Pa.
Crane, W. M. Co., 1131 B'way, N. Y.
Griswold Mfg. Co., Erie, Pa.
Odin Stove Mfg. Co., Ltd., Erie, Pa.
Ringen Stove Co., St. Louis, Mo.

Stoves and Ranges, Oil, Vapor and Gasoline.
National Vapor Stove Mfg. Co., Lorain, O.
Novelty Mfg. Co., Jackson, Mich.
Ringen Stove Co., St. Louis, Mo.
Schneider & Trenkamp Co., Cleveland, Ohio.

Terne Plates.
American Tin Plate Co., New York.

Tin Bars.
National Steel Co., Bridgeport, O.

Tinners' Tools, Machines and Supplies.
Berger, L. D., Philadelphia, Pa.
Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
Tinners' Machinery & Supply Co., 20 Cliff St., New York.

Tinners' Trimmings.
Vogel, Wm. & Bros. Brooklyn, N. Y

Tin Plate
American Tin Plate Co., New York.
Berger, L. D., Philadelphia, Pa.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.
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Keen & Hagerty Mfg. Co., Baltimore, Md.
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Globe Ventilator Co., Troy, N. Y.
Meurer Bros. Co., Brooklyn, N. Y.
National Pancoast Ventilator Co., Phila., Pa.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

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Heiland, Geo. W., 101 Beekman St., N. Y.
Littleford Bros., Cincinnati, O.
Marston, I. G. & Co., Boston, Mass.

Washing Machines.
Boss Washing Machine Co., Cincinnati, Ohio.

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Keen & Hagerty Mfg. Co., Baltimore, Md.

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Colwell Lead Co., 63 Centre St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Water Fronts.
Hessler, H. E. Co., Syracuse, N. Y.

Water Heaters.
Adams, W. J., Joliet, Ill.
Kemp, C. M. Mfg. Co., Baltimore, Md.
Odin Stove Mfg. Co., Ltd., Erie, Pa.

Wind Gates.
Miner & Peck Mfg. Co., New Haven Ct.

Wire and Rod Cutters.
Mersick, C. S. & Co., New Haven, Conn.

Wire Working Machinery.
Rudolphi & Krummel, Chicago, Ill.

SEE ALPHABETICAL INDEX, PAGE 51.

THE METAL WORKER.

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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns, as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

A PLUMBER and TINNER; one who can do all work that comes to a country shop; a single man desired, but must be sober and industrious; state wages and references. G. W. Gibney, Pawling, N. Y. Feb. 24

An all around TINNER for roofing, spouting, furnace and general job work; must be temperate; to the right man will give steady job and good wages. C. W. Howson, Alliance, Ohio. Feb. 24

FOREMAN for steel range plant; must be thoroughly capable of laying out work from start to finish and seeing that only strictly first-class work is done; to right party will give steady employment and wages made satisfactory; reply stating experience, with reference, age and wages wanted. "A. B. C.," care *The Metal Worker*, New York. Feb. 24

A young man of several years' experience at tinning, roofing and furnace work; horse to be taken care of; good opportunity for the right party. W. H. Sniffin, White Plains, N. Y. Feb. 24

BICYCLE REPAIRER; one who can do tin repair also; state wages expected and references. Gouverneur Hardware Company, Gouverneur, N. Y. Feb. 24

SALESMAN of exceptional character and ability visiting the wholesale hardware and tinners' supply houses, to sell line of sheet metal goods on commission in Eastern and Western territory; state references and experience. "Salesman," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. Feb. 24

An experienced TINNER and PLUMBER, not over 35 years of age, and sober; steady employment. Corbin & Bates, Angelica, N. Y. Feb. 17

A well dressed, neat looking, temperate and reliable man, who is experienced in figuring on cornice and sheet metal work, and who thoroughly understands plans; highest commission or salary to the right man. M. S. Gulesian, 21 Berkeley street, Boston, Mass. Feb. 17

A good, sober, steady, all around TINNER and PLUMBER; one who has had experience at steam furnace fitting; steady employment. Frye & Rex, Crestline, Ohio. Feb. 17

First-class STEAM FITTER; one who thoroughly understands steam fitting in all its branches; sober and reliable; none other need answer; write and state wages wanted. W. J. Barrett, 39 Center street, Waterbury, Conn. Feb. 17

At once, a good, all around man at plumbing and tin work and jobbing in a country town in Pennsylvania; must be sober and a good mechanic, and a hustler; single man preferred; call or address. Wm. Horswood, Girardville, Pa. Feb. 17

A SUPERINTENDENT to take charge of the manufacture of a large foundry making a full line of stoves; must be a fully qualified and practical man, and up to date; state age, experience and references; a rare chance to the right man; all letters treated confidentially. "A. B.," care *The Metal Worker*, New York. Feb. 17

A1 TINNER and SLATER; must be a steady and careful workman; steady work the year around to the right man; state wages and age. The Zellner Company, New Philadelphia, Ohio. Feb. 17

SITUATIONS WANTED.

By a PLUMBER, hot water and steam fitter; also can do furnace work, tin and sheet iron work; have had 16 years' experience; used to handling men; can estimate any kind of work from plans; good education; references; am married. "J.," care *The Metal Worker*, New York. Feb. 24

A practical ENAMELER with 14 years' experience on steel and cast iron would like to change his position; references. "F. H.," care *The Metal Worker*, New York. Feb. 24

By a young PLUMBER, 24, single; good jobber; can do some wiping; slight knowledge of tin and sheet iron work; sober and reliable. "Jackson," general delivery, Boonton, N. J. Feb. 24

By STEAM and HOT WATER HEATING ENGINEER; 15 years' experience; good reference; would prefer to locate in New York State with some prominent heating company. "Experience," care *The Metal Worker*, New York. Feb. 24

Expert PLUMBER and LEAD BURNER; will go anywhere; wages considered. T. A. Kempis, care Thomas J. Ward, 678 Lexington avenue, New York. Feb. 24

Steady position by a young man, PLUMBER; nine years' experience; can furnish reference; a sober and industrious workman; city or country. Henry Thomas, Burlington, Vt. Feb. 24

As SALESMAN on the road for a good line of stoves, hardware, &c.; will travel anywhere desired. J. M. Devore, 62 Francis street, Auburn, N. Y. Feb. 24

By a man 35 years old, experienced in natural gas, gas ranges, a first-class stoveman, good tin and sheet iron worker, experienced furnace hand, also understands exhaust hot air and the piping of all kinds of wood working machinery; can make estimates and lay out work. "G. D. L.," 36 Lawrence place, Buffalo, N. Y. Feb. 24

In a stove foundry, by a first-class IRON PATTERN FITTER; best of reference. Walter Snow, Syracuse Stove Company, Syracuse, N. Y. Feb. 24

By a man, 38 years of age, as TRAVELING SALESMAN for a hardware, stove or tinware concern; 12 years' experience in the retail hardware and stove business. "E. W. J.," 913 North Fourth street, Quincy, Ill. Feb. 24

PATTERN MAKER, 32 years of age; has had charge of men on machine and pipe work seven years; ability to draw and lay out work. "Levert," care *The Metal Worker*, 312 The Cuyahoga, Cleveland, Ohio. Feb. 24

By a PLUMBER who can do roofing and general jobbing. B. T. Ebbets, Oyster Bay, L. I. Feb. 24

As GENERAL JOBBER for a jobbing shop; used to inside and outside work; city or country. "Tinsmith," Cold Spring-on-Hudson, N. Y. Feb. 24

As SALES AGENT in metropolitan district for up to date line of gas hot plates, stoves, &c.; the gas companies, department stores and general trade thoroughly canvassed; with the right goods and for a manufacturer of intelligent liberality large business can be done. "Metropolitan," care *The Metal Worker*, New York. Feb. 24

By a TINSMITH, inside and outside work; furnace, slate roofing and gas piping; best of reference as to ability and character from former employer. Geo. Bauer, Port Washington, N. Y. Feb. 24

By a first-class steam and hot water fitter, as SUPERINTENDENT or FOREMAN; capable of taking charge of men and can estimate on all kinds of work; 25 years' experience; 14 years in last place; reference from last employer. P. O. Box 215, Williamsport, Pa. Feb. 24

As FOUNDRY FOREMAN; have had 17 years' experience as foreman of foundries, mostly on stove work; am well posted in all foundry details; am strictly temperate. "W.," 3434 Park avenue, St. Louis, Mo. Feb. 24

By a young TINSMITH and CORNICE WORKER; can lay out details and cut any pattern of ordinary occurrence; temperate and reliable. John S. Nelson, Austin, Texas. Feb. 24

By an all around TINSMITH; can do inside and outside work, general jobbing and some parts of plumbing, piping, &c.; willing to take moderate wages for steady position. Chas. Dutch, Merrion, Ind. Feb. 24

By a good SOLDERER; one who can work at drill press and as steam fitters' helper; willing to work for $8 per week. John Ross, 301 Sixth street, Brooklyn, N. Y. Feb. 24

By a PLUMBER and GAS FITTER, a steady position in city or country. T. H. Warren, 2 James street, Hartford, Conn. Feb. 24

Steady position by a TINSMITH, 23 years of age, with five years' experience at tin trade; also some knowledge of iron pipe, pump work and bicycle repairing; can clerk in store; country preferred. F. Bodle, Cornwall, N. Y. Feb. 17

METAL PATTERN and MODEL MAKER and FITTER where fine, rapid work is required; present employment too rough; have fine executive ability; am expert and authority on wood, metal and other pattern work. Address, for two weeks, Wm. Bolus, Pekin, Ill. Feb. 17

By an all around TIN and SHEET IRON WORKER; a good jobber and mechanic at all branches; can furnish best of reference. A. Hansen, 1701 Spring street, Racine, Wis. Feb. 17

By a first-class SALESMAN, experienced in hardware, tinware, stoves and house furnishing goods; can speak German and English; wholesale and retail experience. "German and English," care *The Metal Worker*, New York. Feb. 17

By a TINSMITH who understands inside and outside work, range, furnace work and jobbing; a knowledge of plumbing; experience in city and country. "M. J.," care J. Merwin, Davenport, N. Y. Feb. 17

By a JAPANNER who understands all branches of the business, enameling steel, cast iron and bicycles. H. Walker, Floyd's Knobs, Ind. Feb. 17

Young PLUMBER; good lead worker; good at all kinds of tin work; A1 joint wiper; would like job city or country at once; sober and industrious. P. E. Burke, 422 Broad street, Newark, N. J. Feb. 17

By a young man, 23, as TINNER; six years' experience at the trade; willing to work for small wages and board for steady position. John A. Reddington, 5 Nafus street, Pittston, Pa. Feb. 17

By a PLUMBER with 11 years' experience. A. Miller, 113 North College street, New York.

By a first-class STEAM FITTER and ENGINEER with heating and engineering concern in Greater New York; any branch, soliciting, estimating, drafting, steam fitting or taking charge; fitter's wages. "D. W. E.," care *The Metal Worker*, New York. Feb. 17

A young man, 25, would like to learn brass molding or any good trade. F. J. Lieber, P. O. Box 16, Hawley, Pa. Feb. 17

By a first-class general TINSMITH and JOBBER; used to range work and is an A1 furnaceman; 15 years' experience; good references if required. W. W. Wheelock, 6 Proctor street, South Framingham, Mass. Feb. 17

By a PATTERN MAKER; first-class on steam and water heaters, furnaces and stoves. "J. E. H.," care *The Metal Worker*, New York. Feb. 17

By a young man who has served three years at plumbing and desires to finish his time; 22 years of age; capable of doing some jobbing and gas piping. "H. W. P.," 64 Locust street, Springfield, Mass. Feb. 17

As PLUMBER and GAS FITTER; a good hand on steam and hot water fitting, tin and sheet iron work; 12 years' experience. John Abrams. Box 75, Hempstead, N. Y. Feb. 17

By a PLUMBER having license; several years' experience; 28 years of age; married; best of reference as to ability and habits. H. Smith, 235 Second street, Pittsfield, Mass. Feb. 17

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As PLUMBER and TINSMITH by a first-class workman; capable to act as foreman; 15 years' experience. Geo. H. O'Neill, 76 Blackstone street, Woonsocket, R. I. Feb. 17

By first-class TINNER; 20 years' experience; strictly temperate; married; speaks German and English; can do all kinds of work, including furnace work, and furnish gilt-edge references as to ability and character; desire situation by March 1 or sooner. "H. G. H.," care Gray & Burgess, Goodland, Ind. Feb. 10

Steady position by a TINSMITH who understands the trade in all branches; an expert on all kinds of lamps and oil stove work; also do some coppersmithing; Greater New York or vicinity preferred. "Tinsmith," care *The Metal Worker*, New York. Feb. 10

By a young man, 27, as TRAVELING SALESMAN for machine company or hardware house; good reference; a hustler. "B. A.," Lock Box 92, Mt. Morris, N. Y. Feb. 10

By a PLUMBER and GAS FITTER; 10 years' experience. R. S. Sholes, Jr., 6 Hamilton avenue, Norwich, Conn. Feb. 10

As CLERK in hardware store; experienced in general hardware, stoves and implement trade. Theo. D. Achilles, Hart, Oceana County, Mich. Feb. 10

By a young man, strictly temperate, 24 years old, as PLUMBER and TINSMITH; married; wishes a steady position; can give first-class references as to workmanship and character. "J. E. W.," 135 Wickliffe street, Newark, N. J. Feb. 10

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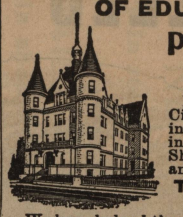

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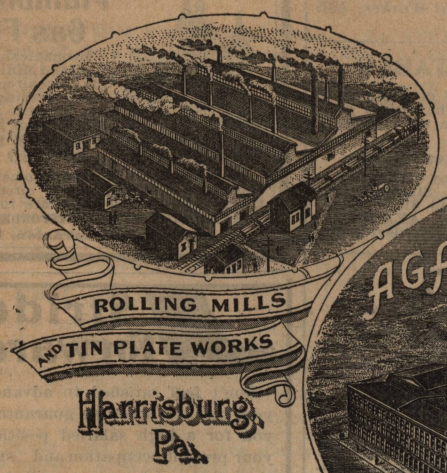

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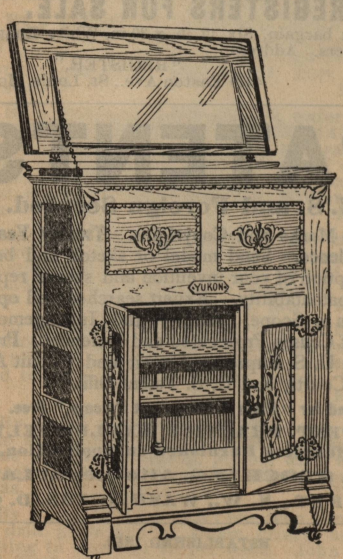

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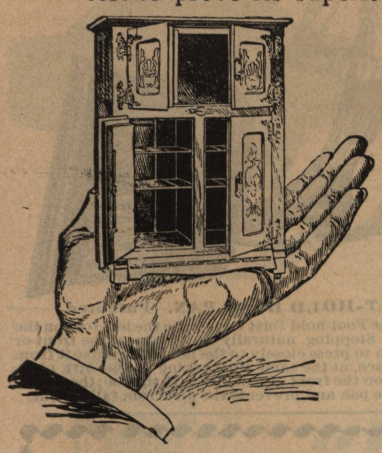

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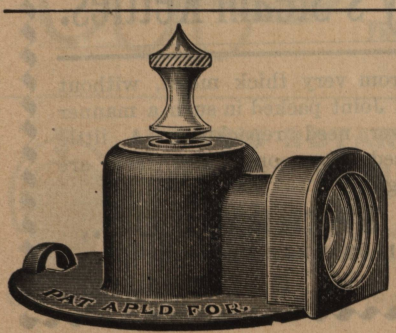

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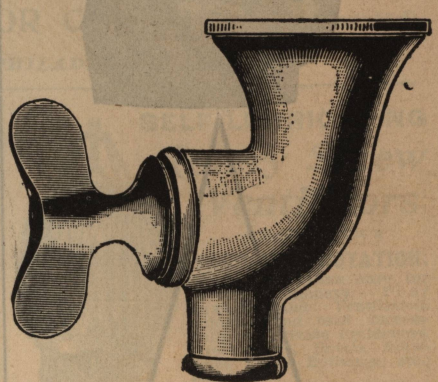

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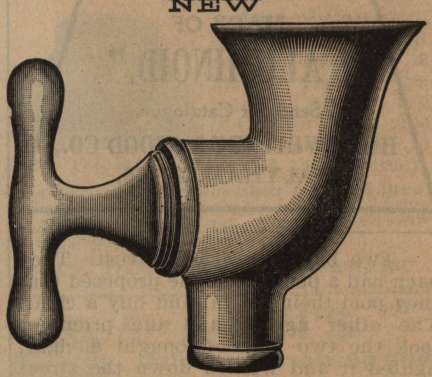

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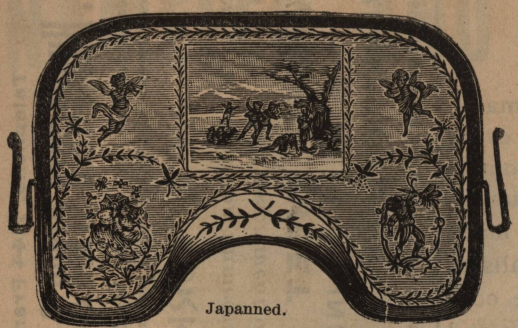

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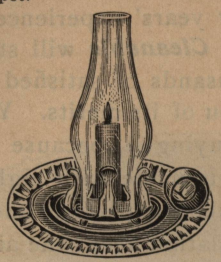

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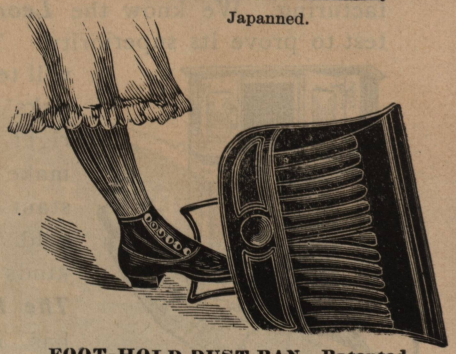

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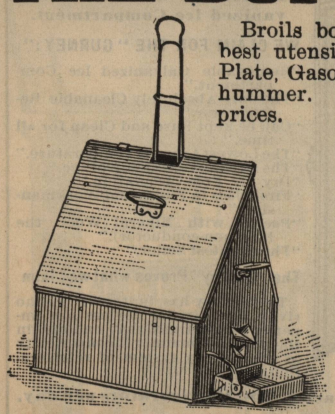

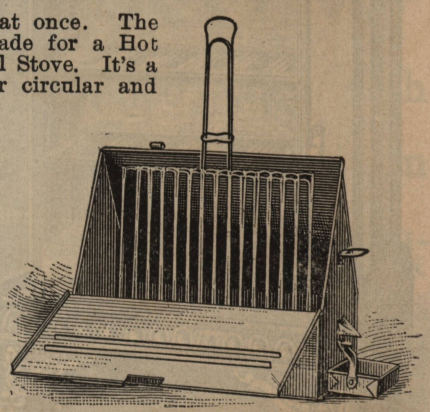

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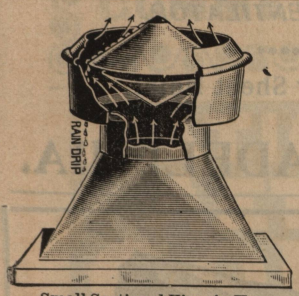

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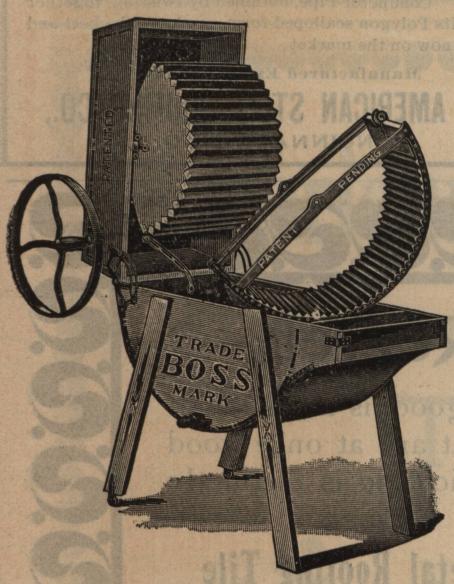

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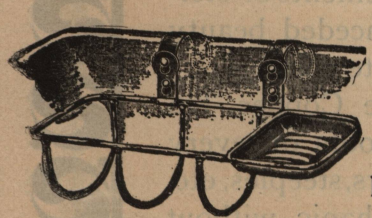

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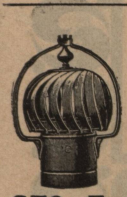

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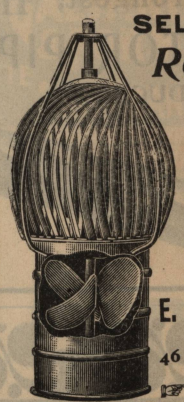

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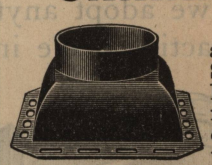

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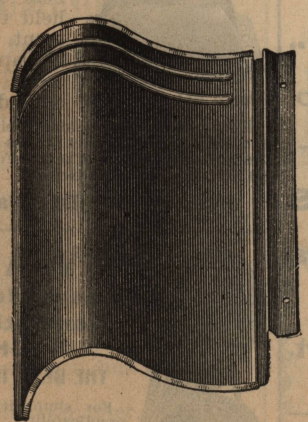

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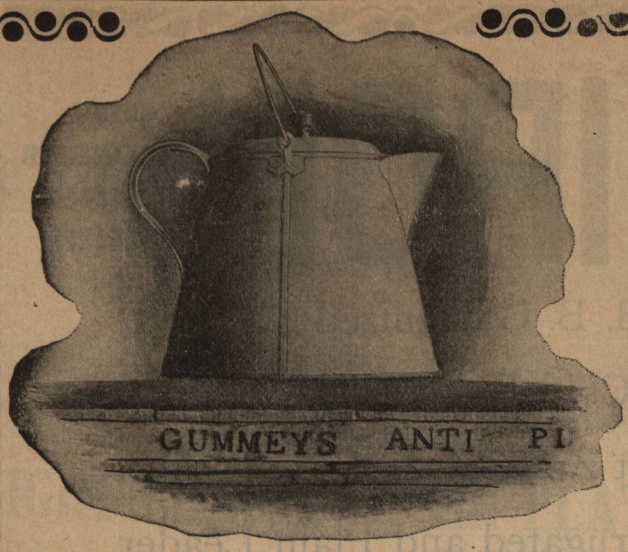

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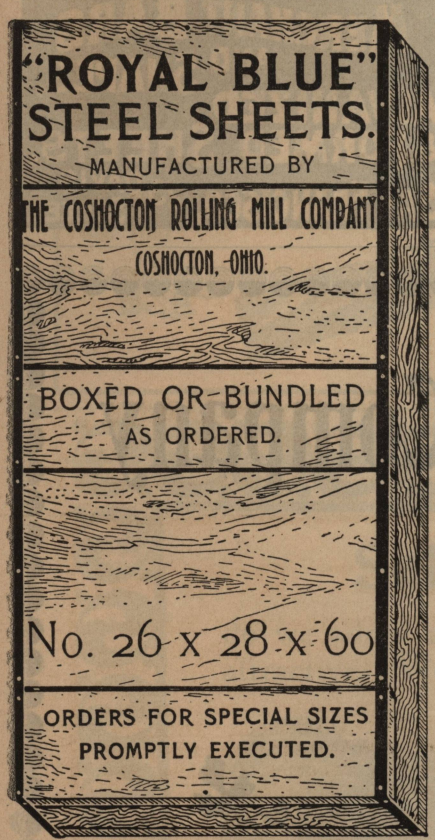

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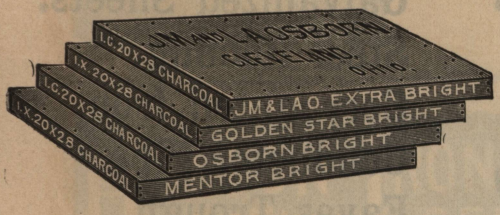

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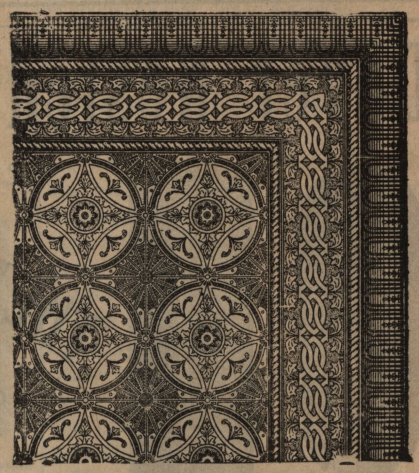

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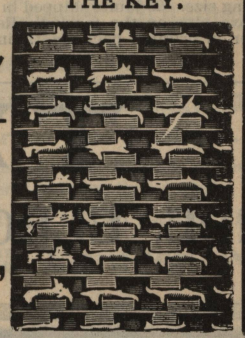

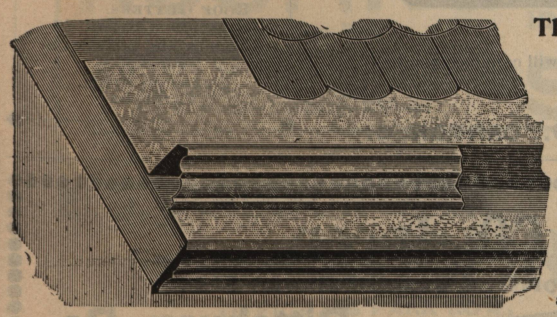

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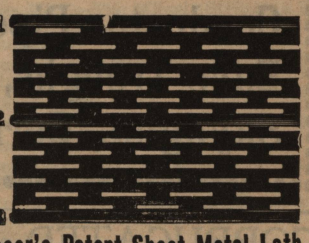

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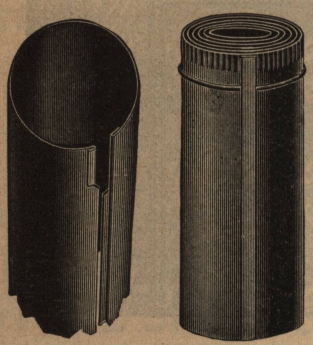

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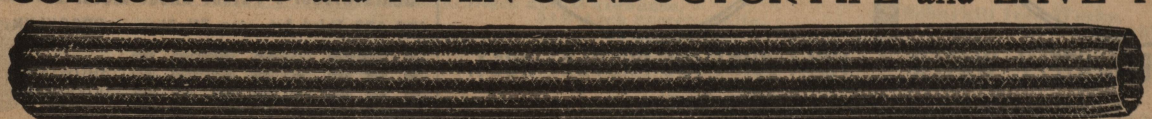

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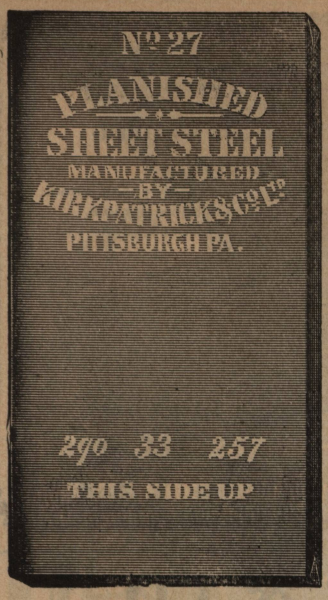

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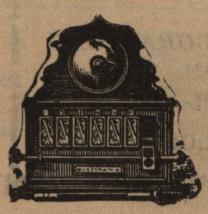

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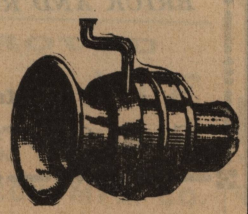

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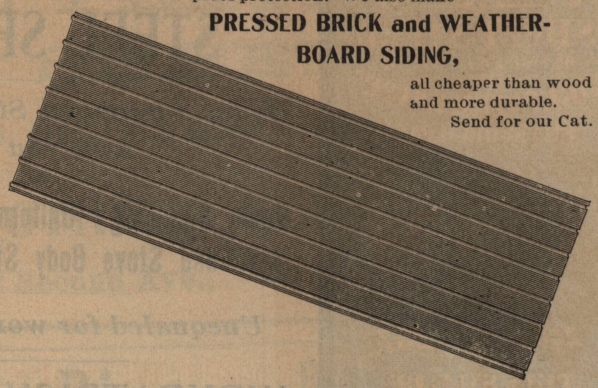

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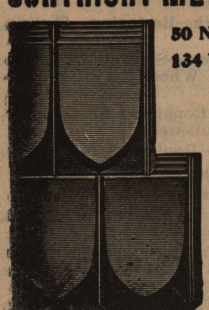

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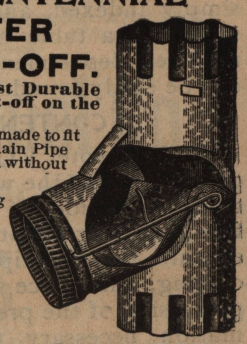

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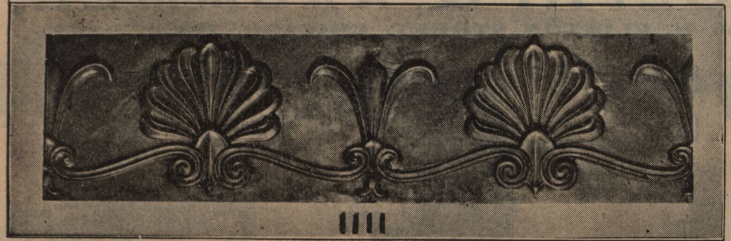

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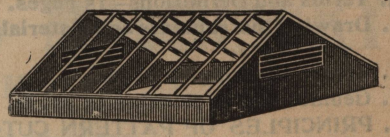

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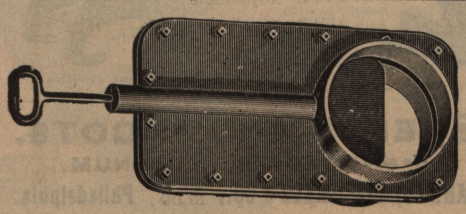

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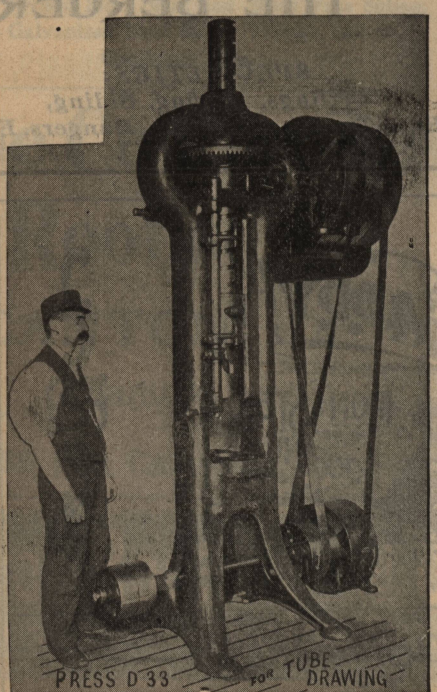

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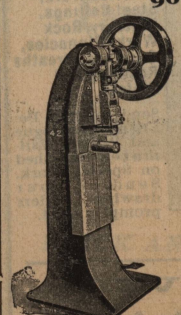
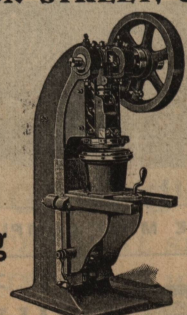


No, 42 Horn Press, Upright.

Presses, Dies, Sheet Metal and Wire Working Machinery.



No. 53 Upright Press with Adjustable Apron, showing Wiring Die.

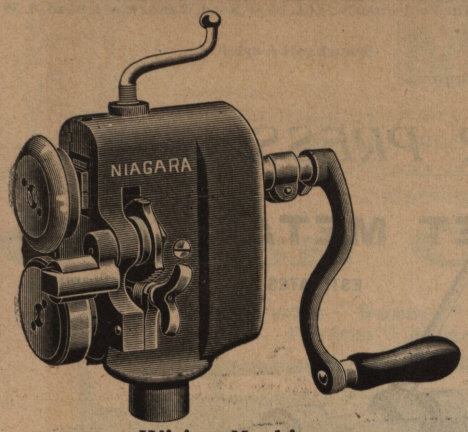
Write for Particulars.

No. 62 Horn Press, Inclinable.

ALUMINUM

SHEETS AND INGOTS.
We also buy **SCRAP ALUMINUM.**
JANNEY, STEINMETZ & CO., DREXEL BLDG., **Philadelphia.**

THE LATEST ENCASED MACHINES FOR TINSMITHS.



Wiring Machine.

The Frames are of modern design and extra heavy.

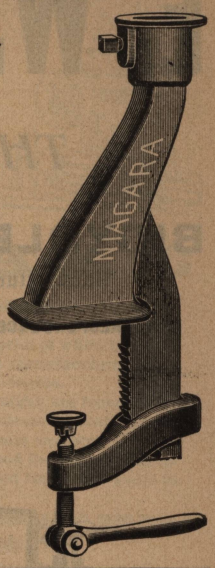
The Faces pass over seams without strain.

The Gauges are made of hardened Tool Steel.

The Crank Screw is quick-acting and not in the way of the work.

The Standard is quick-adjustable and brings the machine beyond the bench.

The Setting Down Machine facilitates double seaming.



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NIAGARA MACHINE & TOOL WORKS, - - Buffalo, N. Y.

Manufacturers of SHEET METAL TOOLS.

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—AND—

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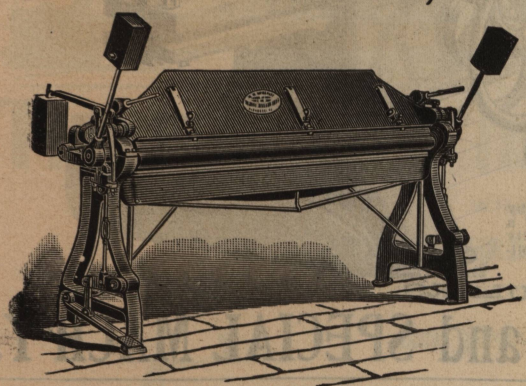

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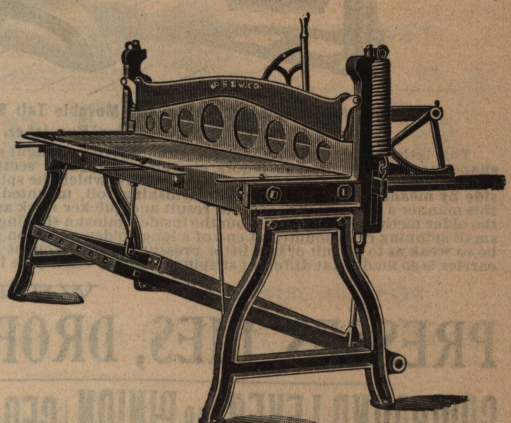
Hundreds sold and **never a complaint.** Works easily and rapidly. The universal verdict is, **IT IS THE BEST IN THE WORLD.**
96 inches long.

Our ***Improved Eureka Cornice Brake.*** Will bend No. 20 iron
96 inches long.



CORNICE MAKERS' SQUARING SHEARS.
With Lever Arc, Automatic Gauge. Will cut No. 22 iron
97 inches long.

Philadelphia Machine Tool Co.,

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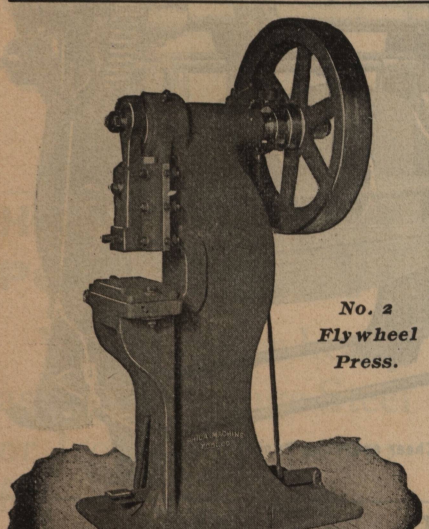

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(Presses, Shears and Curved Moulding Machines).

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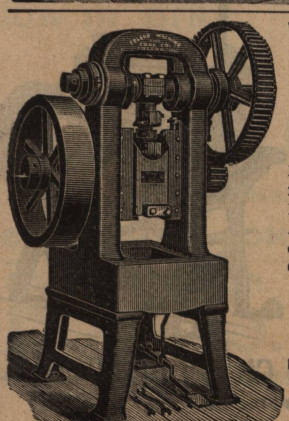

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Power Punching Presses, Drop Presses, Trimming Presses, Stamping Presses, Riveting Presses, Embossing Presses, Presses with Automatic Feeds, Chain Presses and Machines for working Bar and Sheet Metals. Complete outfits for Can Making.

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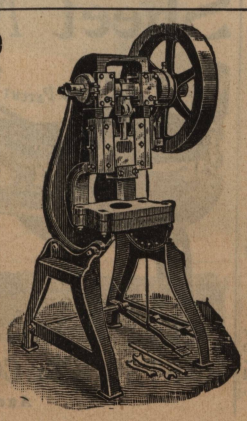
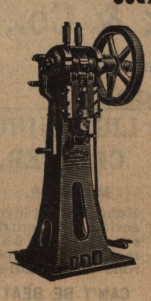


IMPROVED

Patent Automatic Can Body Double Lock Seaming Machines.



COMBINATION Presses and Dies, Sheet Metal Tools, &c.

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BICYCLE, ELECTRICAL AND OTHER SHEET METAL TOOLS.

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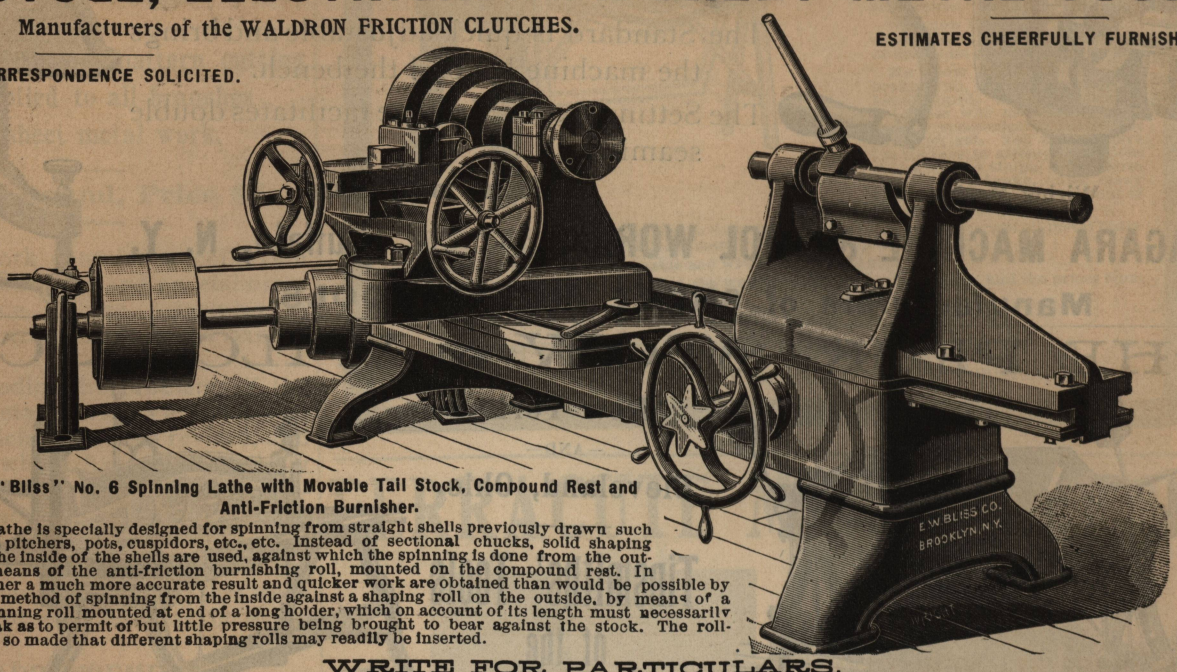

"Bliss" No. 6 Spinning Lathe with Movable Tail Stock, Compound Rest and Anti-Friction Burnisher.

This lathe is specially designed for spinning from straight shells previously drawn such shapes as pitchers, pots, cuspidors, etc., etc. Instead of sectional chucks, solid shaping rolls on the inside of the shells are used, against which the spinning is done from the outside by means of the anti-friction burnishing roll, mounted on the compound rest. In this manner a much more accurate result and quicker work are obtained than would be possible by the older method of spinning from the inside against a shaping roll on the outside, by means of a small spinning roll mounted at end of a long holder, which on account of its length must necessarily be so weak as to permit of but little pressure being brought to bear against the stock. The roll-carrier is so made that different shaping rolls may readily be inserted.

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PRESSES, DIES, DROP HAMMERS and SPECIAL MACH'Y.

COMPOUND LEVER AND PINION SLITTING SHEAR.

For Cutting Sheet Metal.

Every machine shop will save money by having one or more in use.

Will cut ⅛ inch Cast Steel, No. 8 Sheet Iron and No. 6 Hard Brass.

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Manufacturers,

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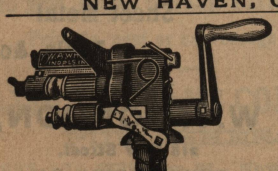

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Model 98.

Hand or Foot lever action. Eccentric swedge adjustment. Tool steel rolls and spindles.

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BRAKES,

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Heavy and Light

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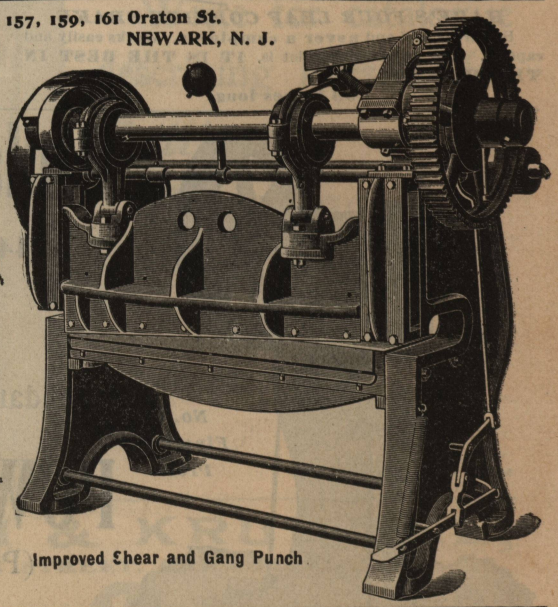
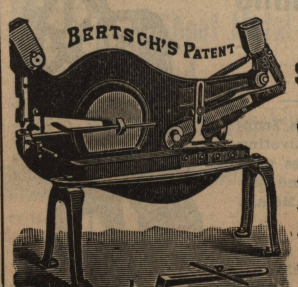
Punches, Presses, Sheet Steel Lath Machines, Drop Presses, Draw Benches, and *Special Machinery* of all descriptions



Improved Shear and Gang Punch

Sheet Metal Tools



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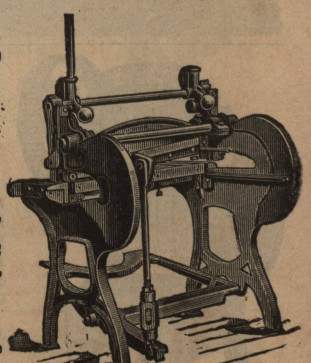
SHEARS, PUNCHES, Etc.

SPECIAL SHEET METAL WORKING MACHINERY FROM SPECIFICATIONS PRODUCED ON SHORT NOTICE.



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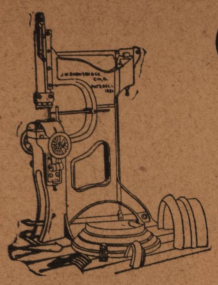
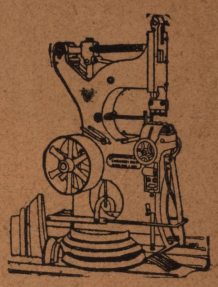


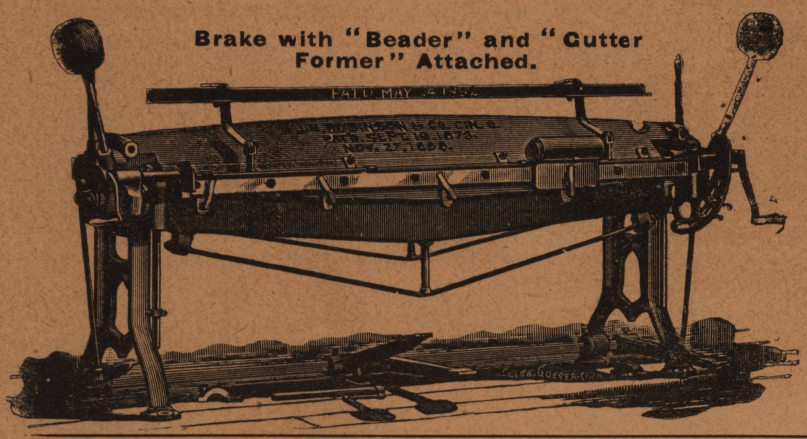
CURVED MOLDING MACHINES



for making every style of sheet metal curved moldings quickly, cheaply and accurately. The hammer gives a perpendicular blow entirely preventing the drawing or twisting of the material while being formed.

GLOBE CORNICE BRAKE

Brake with "Beader" and "Gutter Former" Attached.



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Cornice Moldings, true and straight, are formed with ease and speed on the above illustrated 8-foot Cornice Brake, which brake is made of cast and wrought iron and steel, many of which have stood the test of twenty-seven years and more, and are good for several years to come.

High Grade Cornice Brakes—try them and save your strength, time and money.

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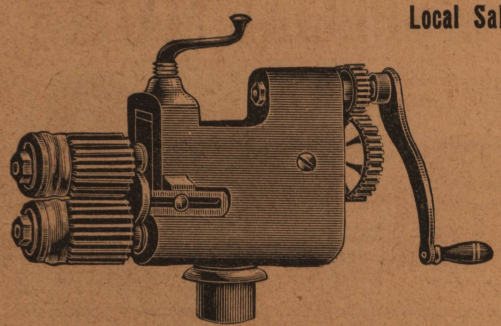

Stove Pipe Crimper and Bender.

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HAND POWER LEVER SHEAR.

Will shear as heavy as No. 10 Gauge Steel or Iron. Very powerful, strong and low in price.

Geo. C. Keene & Co.

Mfrs. The Keene Brake.

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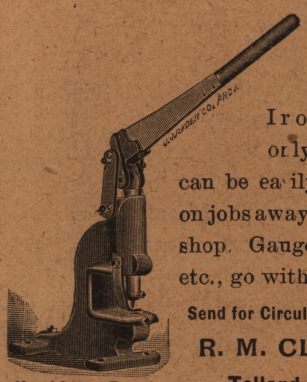

Hand Lever Punch.

This Punch will punch 3-16 in. Iron. Weighs only 75 lbs. and can be easily taken out on jobs away from workshop. Gauges, Stripper, etc., go with machine.

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TWO SIZES.
No. 2.—Pan 12 x 15 inches.
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The Pans will accommodate six and nine irons, while the stove, having a circular fire chamber lined with brick, is very economical in the use of fuel.

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or any room pleasantly, economically and effectively is not a simple matter. Mistakes occur where least expected. I have made such lighting a specialty for forty years.

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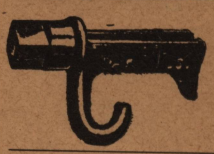

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